ARCHER CSE Service Quarterly Report

Quarter 4 2014

epcc

1. Executive Summary

This report covers the period: 1 October 2014 to 31 December 2014 inclusive.

- Centralised CSE Team:
  - The CSE team resolved 301 queries during this reporting period.
  - The number of In-Depth queries received continues to fall compared to previous quarters due to the increasing maturity of the system and continually improved documentation and online training. Trends over the 4 quarters in 2014 indicate that the number of In-Depth queries received each quarter may be stabilising to around 30 per quarter (roughly one every 3 days).
  - The median resolution time for In-Depth queries is 2 weeks ensuring resolutions for users in a timescale where the solution is still relevant.
  - The median completion time for Technical Assessments is 3 days including discussions and clarifications with applicants reducing the time pressure for applicants applying for ARCHER access.
- Summary of feedback:
  - Feedback on query handling uniformly rated the service as "Excellent".
- Training:
  - Provided 12 days (212 student-days) of face-to-face training in the quarter, at 5 different locations, reducing the requirement on attendees to travel large distances.
  - Provided 1.5 days of virtual tutorials as interactive webinars with 60 attendees in total. All virtual tutorials are now made available on the ARCHER youtube channel shortly after delivery.
  - The external training panel approved training plan for 2015.
  - First survey for measuring longer-term impact of training has been conducted and feedback from the 46 responses is currently being analysed.
  - ARCHER driving test designed and trial run completed at recent introductory course: all 10 attendees who attempted it passed with scores between 60% and 80%. Test now available online with associated training materials.
- eCSE:
  - All 14 projects from the 1st eCSE call have now started and all but one from the 2nd call have started.
  - The third eCSE call opened on 5 August 2014 and closed on 16 September; 16 proposals were received, of which 10 were accepted at the panel meeting.
  - Interim reports have been collected for running eCSE projects. Final report templates will be sent to PIs of completed projects shortly, and the first eCSE webinar is scheduled to take place in January.
- ARCHER Image Competition and Calendar:
  - 32 images and associated descriptions were submitted to the 1st ARCHER Image Competition. These showcase the range of research performed on ARCHER in an accessible format.
  - The images and descriptions formed the basis of the ARCHER Calendar that was produced and sent to all entrants and a selection of around 400 other people associated with ARCHER to increase profile of the Service.
- Phase 2 Upgrade:
  - Provided the coordinating effort and technical support for the special user testing period that allowed a small number of users to run full system capability jobs across 4920 compute nodes. This provided a useful test of the upgraded hardware that complimented traditional Acceptance Tests.
- Documentation review conducted to improve the quality and consistency of online documentation for end users:
  - Typos and minor errors corrected
  - Updated to reflect latest status of service
  - Future development work identified (see Forward Look below)

2. Impact Summary

- Outreach Activities:
  - Software Engineering in the Real World Panel, Computing Sciences, University of Glasgow, 4 Dec 2014: Described the work of ARCHER CSE and answered questions on role from ~100 undergraduate students.
  - STEMNET Routes into Employment Event, Kirkcaldy High School, 5 Nov 2014
  - Midlothian Science Festival, Gorebridge, 9 Oct 2014: Presented ARCHER hardware and HPC
  - School visit, St Mary's RC Primary, Bannockburn, 8 Oct 2014: Presented ARCHER hardware and HPC
- Papers from Centralised CSE Team:
  - **Monitoring the Cray XC30 Power Management Hardware Counters**, Michael Bareford, *ARCHER White Paper*, December 2014
  - **Performance of Parallel IO on ARCHER**, David Henty, Adrian Jackson, Charles Moulinec, Vendel Szeremi *ARCHER White Paper*, December 2014
  - **What's with all this Python import scaling, anyhow?**, Nick Johnson, *ARCHER White Paper*, December 2014
- Meetings Attended by Centralised CSE Team:
  - Plasma Physics Consortium Meeting, 26-27 November 2014
  - UK Consortium for Mesoscale Engineering Science, 17 December 2014
- Presentations by Centralised CSE team:
  - Presentation on ARCHER to French computing centre meeting, 6-7 October 2014
  - School on Parallel Programming and Parallel Architecture for HPC and Developer School for HPC applications in Earth Sciences + Symposium on HPC and Data-Intensive Applications in Earth Sciences, Rome (27 Oct – 14 Nov 2014). Provided a number of presentations on using HPC to 50 attendees from developing countries.
  - Promotion of ARCHER to Reaction Engines space plane manufacturers (http://www.reactionengines.co.uk/), 2-3 December 2014. They are close to the limit of their in-house HPC resources and are considering using ARCHER for their larger simulations.
- Supercomputing 14, New Orleans, USA
  - ARCHER featured prominently at EPCC booth on exhibition floor.
  - Women in HPC (WHPC) Workshop: 11 early career women researchers were given the opportunity to present their work, to the first female-dominated audience they have probably ever experienced. Also, for all of them, it was their first experience of the Supercomputing conference.
  - The WHPC networks presence at SC14 provided lots of discussion and we were also involved in a 'Community Hub' discussion at the Intel booth on encouraging more young women to study STEM subjects, and we were co-organisers of the 5th Women in HPC Birds of a Feather session (BoF). The BoF and the workshop both provided lots of discussion and we hope to use the information gathered to develop best practise guides for both employers and women working in HPC to improve diversity in the workplace.
  - Following on from the WHPC workshop we have already put in place a job advertising section on the WHPC website, allowing employers who are keen to recruit women to advertise to our network, and we are running a survey to understand what our members want from WHPC in 2015.

3. Forward Look

- Centralised team:
  - Q1 2015 will include the production of set of how-to screencasts covering usage of debuggers and profilers on ARCHER.
- Feedback from Annual Survey:
  - We will consider the feedback from the Annual Survey with all other service partners and assist in assessing, prioritising and implementing suggestions.
- Documentation:
  - Implement changes recommended by documentation review to improve content and consistency of online documentation. The documentation is a key part of the Service and improving the quality should lead to more effective use of the service and reduce the load on the Helpdesk.
- Website development:
  - Professional photographs of the ARCHER CSE staff have recently been taken. These will be added to the ARCHER website to give "faces" to the ARCHER service.
- Technical Forum:
  - Plan to re-assess available webinar technologies to see if any offer a better solution than the current Collaborate technology.
  - The first batch of eCSE projects will be finishing and will give presentations on their work via TechFoum webinars. This will help to share experience and knowledge gained through eCSE projects to the ARCHER and wider HPC communities. It will also promote ARCHER and the eCSE programme as vehicles for leading scientific software development.
- Online material
  - ARCHER Driving Test to be released to users in Q1 2015. Serves a dual purpose: improve the HPC skills of ARCHER user community and allows for more speculative use of ARCHER via kAU granted to users who pass.
  - Initial online lectures to support ARCHER Driving Test will be online in Q1 2015 to enable new users to get up and running on the system as quickly and easily as possible.
- Women in HPC
  - WHPC event planned for south of England in Spring 2015.
- eCSE:
  - Initial set of eCSE Case Studies and reports to be available online to showcase the work funded by eCSE programme.

4. Contractual Performance Report

This is the contractual performance report for the ARCHER CSE Service for the Reporting Periods: October 2014, November 2014 and December 2014.

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

CSE Query Metrics

- **QE1:** The percentage of all queries notified to the Contractor by the Help Desk in a Quarter that the Contractor responds to, and agrees a work plan with, the relevant End User within 3 working hours of receiving the notification from the Help Desk. *Service Threshold: 97%; Operating Service Level: 98%.*
- **QE2:** The percentage of all queries notified by the Help Desk to the Contractor that have been satisfactorily resolved or otherwise completed by the Contractor within a 4-month period from the date it was first notified to the Contractor. *Service Threshold: 80%; Operating Service Level: 90%.*
- **TA1:** The percentage of all technical assessments of software proposals provided to the Contractor by the Help Desk in any Service Period that are successfully completed by the Contractor within 10 days of the technical assessment being provided to the Contractor by the Help Desk. *Service Threshold: 85%; Operating Service Level: 90%.*
- **FB1:** The percentage of End User satisfaction surveys for CSE queries carried out in accordance with the Performance Monitoring System by the Contractor showing the level of End User satisfaction to be "satisfactory", "good" or "excellent". *Service Threshold: 30%; Operating Service Level: 50%.*

Period	Oct-14		Nov-14		Dec-14		Q4 2014	
Metric	Perf.	SP	Perf.	SP	Perf.	SP	Perf.	Total
QE1	100%	-2	100%	-2	100%	-2	100%	-6
QE2	100%	-2	100%	-2	100%	-2	100%	-6
TA1	92%	0	100%	-1	100%	-1	96%	-2
FB1	100%	-2	100%	-2	100%	-2	100%	-6
Total		-6		-7		-7		-20

Pink – Below Service Threshold
Yellow – Below Operating Service Level
Green – At or above Operating Service Level

Training Metrics

- **FB2:** The percentage of all training satisfaction surveys carried out in accordance with the Performance Monitoring System by the Contractor) in each Quarter that are rated "good", "very good" or "excellent". *Service Threshold: 70%; Operating Service Level: 80%.*

Period	Oct-14		Nov-14		Dec-14		Q4 2014	
Metric	Perf.	SP	Perf.	SP	Perf.	SP	Perf.	Total
FB2	100%	-1	100%	-1	100%	-1	99%	-3
Total		-1		-1		-1		-3

Pink – Below Service Threshold
Yellow – Below Operating Service Level
Green – At or above Operating Service Level

5. CSE Queries

Queries Resolved in Reporting Period

Metric Descriptions

In-Depth	All technical queries passed to ARCHER CSE team
Course Registration	Requests for registration on ARCHER training courses or enquiries about registration
Technical Assessment: <Category>	Request for Technical Assessments of applications for ARCHER time
eCSE Application	Queries relating to eCSE applications

A total of 301 queries were resolved by the CSE service in the reporting period.

Metric	Oct-14	Nov-14	Dec-14	Total	% Total
In-Depth	16	8	9	33	11.0%
Course Registration	123	57	45	225	74.8%
Technical Assessment: Grant	9	1	4	14	4.7%
Technical Assessment: RAP	1	0	17	18	6.0%
Technical Assessment: Instant	2	2	2	6	2.0%
eCSE Application	5	0	0	5	1.7%

All of the feedback left by users on queries was rated “Excellent”. 5 query feedback responses were received on In-depth queries in the reporting period. This represents a 15% return rate for feedback forms.

Resolved In-Depth queries fell into the following categories:

Category	Number of Queries	% Queries
3rd Party Software	16	54.5%
User Programs	6	18.2%
Compilers and system software	5	15.2%
Other	2	6.1%
Performance and scaling	1	3.0%
Login, passwords and ssh	1	3.0%

In Depth Query Highlights

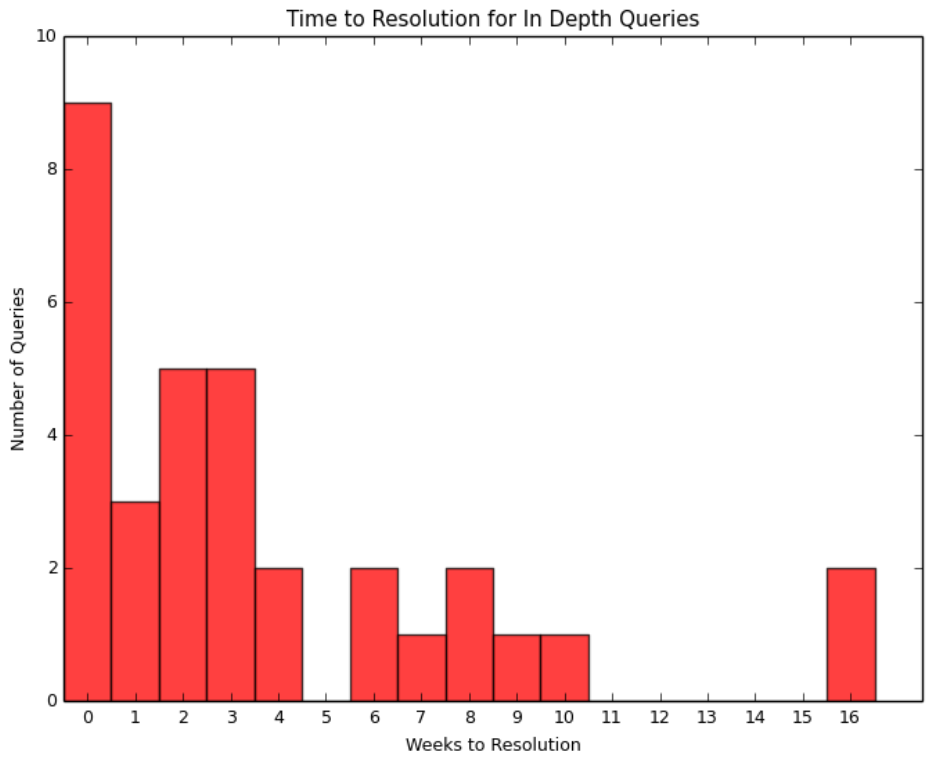
A small number of In Depth queries have been selected to illustrate the work of the centralised CSE team over the report period.

Q446756: Openfoam-2.2.2 module - shared library error
User required a serial version of OpenFOAM compiled and installed to run on the postprocessing (PP) nodes. As the PP nodes have a different CPU architecture to the compute nodes, this involved recompiling all components of OpenFOAM. A number of complications and issues that arose throughout the compilation were resolved. The result was a serial version of OpenFOAM that is compatible with the large memory PP nodes. This expands the capability of ARCHER for the large number of OpenFOAM users on the system.

Q454682: Code Saturne
A user was struggling to get the engineering code, Code Saturne, to run correctly on ARCHER. After a deep delve into the source code spanning multiple weeks, the CSE team eventually tracked down the problem to a bug that meant that the code could not launch correctly on Cray XC systems. The modification to the source code suggested by the CSE team resolved the issue and allowed the user to use ARCHER for his research.

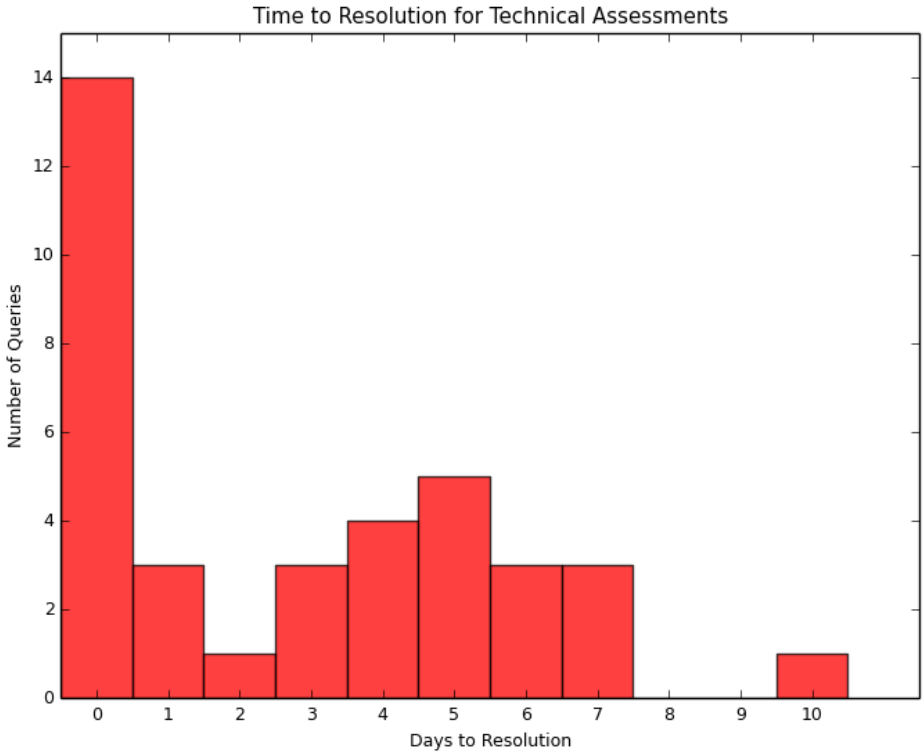
Q446468: WRF Version 3.6.1
User was attempting to build the latest version of the climate modelling code, WRF, and ran into a number of problems. After a large amount of work, the CSE team was able to provide both a centrally installed version of the code for use by all ARCHER users and also a set of build configurations and instructions for advanced users who modify and build the code themselves. During the process a number of bugs with the WRF code itself were discovered and passed back to the WRF development team.

A histogram of the time to resolution for In Depth queries (see below) reveals that the median resolution time is currently 2 weeks.



Technical Assessments

A histogram of the time to completion for Technical Assessments (see below) reveals that the median completion time is currently 4 days.



6. Training

The CSE Service has provided a total of 12 days (212 student-days) of face-to-face training across five different locations in the reporting period, plus 1.5 days of interactive web-based training. The table below summarises the training delivered in Q4 2014.

Month	Dates	Course	Location	Days	Attendees
Oct 2014	8	Virtual Tutorial: Parallel IO and the ARCHER Filesystem	Online	0.5	
	21-22	Hands-on Introduction to HPC	London	2	12
	23-24	Message Passing Programming with MPI	London	2	7
Nov 2014	12	Virtual Tutorial: Introduction to Version Control	Online	0.5	
	26-27	Shared Memory Programming with OpenMP	Durham	2	18
Dec 2014	3-4	Software Carpentry Workshop	Edinburgh	2	37
	10	Virtual Tutorial: An Introduction to GPU Programming	Online	0.5	
	16-17	Single Node Performance Optimisation	Cambridge	2	20
	16-17	Hands-on Introduction to HPC	Southampton	2	12

On the feedback forms, attendees rated 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 106 feedback forms on the CSE courses.

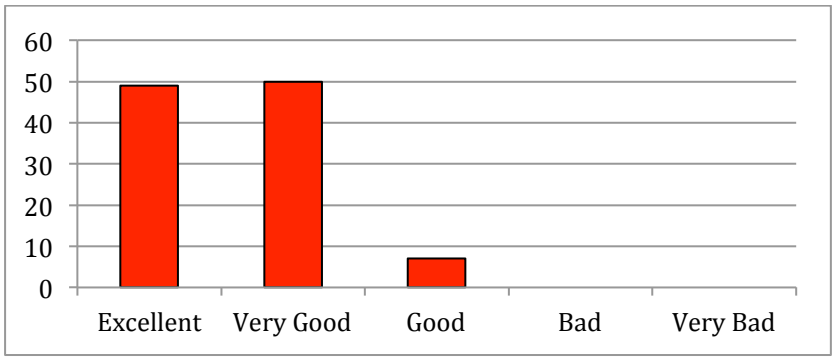


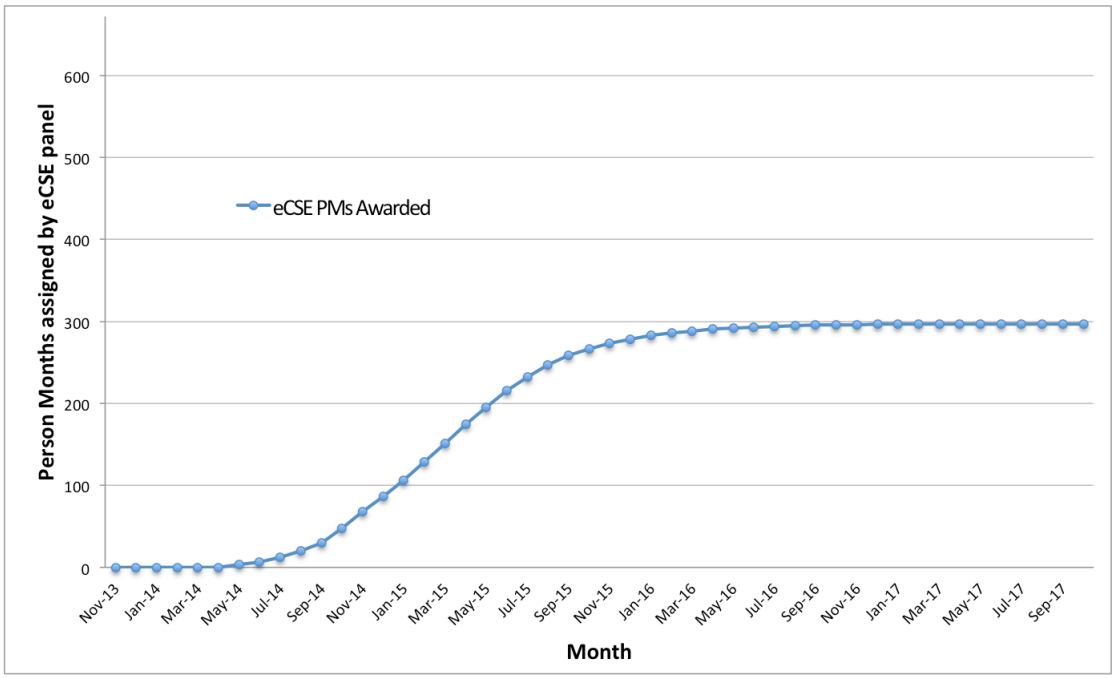
Figure 1: Breakdown of feedback responses from training course surveys for Q4 2014.

17.5 days of training are currently planned for the following quarter. Details are provided in the table below.

Month	Dates	Course	Location	Days
Jan 2015	7	Virtual Tutorial: ARCHER eCSE Tutorial	Online	0.5
	28-29	Data Management: IO, Transfer and Storage	Edinburgh	2
	28-30	Message-Passing Programming with MPI	Sheffield	3
Feb 2015	18-19	Fortran 95	London	2
	TBC	Virtual Tutorial	Online	0.5
	TBC	Hands-on Introduction to HPC	London	2
Mar 2015	24-26	Threaded Programming	Southampton	3
	TBC	Virtual Tutorial	Online	0.5
	TBC	Multicore Programming	Edinburgh	2
	TBC	Programming the Xeon Phi	Edinburgh	2

7. Embedded CSE (eCSE)

Overview of eCSE Effort



- The eCSE person months awarded up to and including the 3rd eCSE call are shown in blue
- The red dotted line shows a theoretical linear spend of person months from the date when the first awarded eCSE project started until the end of the programme.
- At least 672 person months will be awarded by the end of the project (14 FTEs for 4 years)
- 310 person months have been awarded so far over 33 awarded eCSE projects

eCSE Call 1

- All 14 projects have started.
- Contracted being negotiated for 1 project.
- A risk analysis identified all projects as being of either low or very low risk apart from eCSE01-019 which was considered to be of medium risk due to difficulties in agreeing staffing for the project.

eCSE Call 2

- 17 Proposals received through SAFE (1 subsequently withdrawn due to staffing issues in the project)
    - Withdrawn proposal planned for resubmission once appropriate local staff can be identified by PI.
- 9 proposals were successful
- 8 out of 9 projects started
- 1 project still to start and will start on 01/02/15 as a new member of staff has recently been recruited by UCL to work on the project
- Of the 8 started projects, 1 is still to sign a contract
- A risk analysis identified all projects as being of either low or very low risk apart from the following:

- eCSE02-2 which was considered to be of medium risk due to its reliance on outdated versions of OpenFOAM. The technical staff member for this project is in the process of moving the work to more recent versions of OpenFOAM
- eCSE02-11 which was considered of medium risk due to the original named member of technical staff leaving the project and a new member of staff being recruited.

eCSE Call 3

- 16 proposals received through SAFE
- 10 proposals were successful
- 6 projects require contracts and these are presently in the process of being negotiated
- A risk analysis identified all projects as being of either low or very low risk apart from the following:
  - eCSE02-8 which was identified as being of medium risk due to the challenging nature of completing the work within the given timescale
  - eCSE02-9 which was identified as being of medium risk due to the technically challenging nature of the work

eCSE Call 4

The 4th eCSE call opened on 25/11/14 and will close on 13/01/15

Future eCSE Calls

eCSE calls are run to a regular schedule. The future calls are:

- eCSE05: opens Tuesday 31/03/15 and closes at 4pm on 12/01/15
- eCSE06: opens Tuesday 04/08/15 and closes at 4pm on 15/09/15
- eCSE07: opens Tuesday 24/11/15 and closes at 4pm on 12/01/16

eCSE Call 1: Project List

eCSE ID	PI (Institution)	Title	Technical Staff (PMs/Institution)	Total PMs	Status
eCSE01-001	Michail Stamatakis <m.stamatakis@ucl.ac.uk> (UCL)	*Zacros Software Package Development: Pushing the Frontiers of Kinetic Monte Carlo Simulation in Catalysis*	Owain Kenway (3/UCL) Ian Kirker (3/UCL) Jens Nielsen (3/UCL) Mayeul d'Avezac (3/UCL)	12	Started 01/09/14
eCSE01-002	Dr Alan Gray < a.gray@ed.ac.uk> (EPCC)	*Introducing Thread and Instruction Level Parallelism into Ludwig*	Alan Gray (12/EPCC)	12	Started 01/09/14
eCSE01-003	Dr Benedict Rogers <benedict.rogers@manchester.ac.uk> (Manchester)	*Developing highly scalable 3-D incompressible SPH*	Xiaohu Guo (12/STFC)	12	Started 01/09/14
eCSE01-004	Chris-Kriton Skylaris <c.skylaris@soton.ac.uk> (Southampton)	*A pinch of salt in ONETEP's solvent model*	Lucian Anton (3/STFC)	3	Completed 31/10/14
eCSE01-005	Mark van Schilfgaarde <mark.van_schilfgaarde@kcl.ac.uk> (KCL)	*QuasiParticle Self-Consistent GW calculations of many-atom systems*	Martin Lueders (6/STFC)	6	Started 01/08/14
eCSE01-008	Dr. Prashant Valluri <Prashant.Valluri@ed.ac.uk> (Edinburgh (non EPCC))	*TPLS: Optimised Parallel I/O and Visualisation*	Toni Collis (8/EPCC)	8	Started 01/04/14
eCSE01-009	Dr Gerard Gorman<g.gorman@imperial.ac.uk> (Imperial)	*Scalable and interoperable I/O for Fluidity*	Michael Lange (6/Imperial)	6	Started 01/07/14
eCSE01-010	Dr Miguel O. Bernabeu<miguel.bernabeu@ucl.ac.uk> (UCL)	*Adding a resolved deformable particle model to a highly-parallel blood flow solver for sparse vascular networks*	Owain Kenway (3/UCL) Ian Kirker (3/UCL) Jens Nielsen (3/UCL) Mayeul d'Avezac (3/UCL)	12	Started 01/09/14
eCSE01-013	Jimena Gorfinkiel	*Efficient computation of two-*	Zdenek Masin (12/Open)	12	Started 16/06/14

	<Jimena.Gorfinkiel@open.ac.uk> (Open)	*electron integrals in a mixed Gaussian/B-spline basis.*			
eCSE01-015	Prof Michael J Fagan <m.j.fagan@hull.ac.uk> (Hull)	*Large scale voxel based modelling*	Neelofer Banglawala EPCC (7/EPCC) Richard Holbrey (8/Hull)	15	Started 01/04/14
eCSE01-016	Dr Massimo Bollasina<massimo.bollasina@ed.ac.uk> (Edinburgh (non EPCC))	*Porting and enabling use of the Community Earth System Model on ARCHER*	Gavin Pringle (4/EPCC)	4	Completed 30/11/14
eCSE01-017	Dr Matt Probert <matt.probert@york.ac.uk> (York)	*Hybrid OpenMP and MPI within the CASTEP code*	Edward Higgins (12/York)	12	Started 01/07/14
eCSE01-018	Scott M. Woodley <Scott.Woodley@ucl.ac.uk> (UCL)	*Tuning FHI-Aims for complex simulations on CRAY HPC platforms*	Matthew Farrow (12/UCL)	12	Started 01/06/14
eCSE01-019	lian Todorov <lian.todorov@stfc.ac.uk> (STFC)	*DL_POLY_4: Multiple Time Stepping Development Support*	Ian Bush (6/Oxford)	6	Started 01/01/15 contract being agreed

eCSE Call 2: Project List

eCSE ID	PI (Institution)	Title	Technical Staff (PMs/Institution)	Total PMs	Status
eCSE02-2	Prof Jason M Reese <jason.reese@ed.ac.uk> (Edinburgh)	*Multi-Scale Engineering Flow Simulation: Hybrid MPI/OpenMP Optimization on ARCHER*	Saif Mulla (12/Edinburgh)	12	Started 20/09/14
eCSE02-3	Dr Patrick E. Farrell<patrick.farrell@maths.ox.ac.uk> (Oxford)	*Scalable automated parallel PDE-constrained optimisation for dolfin-adjoint*	Dominic Sloan-Murphy (8/EPCC)	8	Started 01/09/14
eCSE02-6	Prof Hugo van der Hart <h.vanderhart@qub.ac.uk> (QUB)	*Performance enhancement of RMT codes in preparation for the treatment of circular polarization*	Jonathan Parker (9/QUB)	9	Started 01/10/14
eCSE02-8	Dr David Dickinson<d.dickinson@york.ac.uk> (York)	*Optimising Field Solves in GS2: Improved load balancing and non-blocking communications for maximal efficiency at high #core*	Adrian Jackson (7/EPCC)	7	Started 01/09/14
eCSE02-9	Matt Probert <matt.probert@york.ac.uk> (York)	*Optimising van der Waals simulations with the CASTEP code*	Matthew Hodgson (7/York)	7	Started 01/08/14
eCSE02-11	Dr Nicolae Panoiu <n.panoiu@ucl.ac.uk> (UCL)	*Fast and Massively Distributed Electromagnetic Solver for Advanced HPC Studies of 3D Photonic Nanostructures*	Marcello Artioli (12/UCL)	12	Starting 01/02/15
eCSE02-13	Prof Spencer Sherwin<s.sherwin@imperial.ac.uk> (Imperial)	*Communication and I/O masking for increasing the performance of Nektar++*	Simon Clifford (6/Freelance) Rupert Nash (6/EPCC)	12	Started 01/10/14
eCSE02-15	Dr Nicholas D M HINE <ndmh3@cam.ac.uk> (Cambridge)	*Calculating Excited States of Extended Systems in LR-TDDFT*	Tim Zuehlsdorff (6/Cambridge)	6	Started 01/10/14
eCSE02-17	Dr James Harle <jdha@noc.ac.uk> (NOC)	*NEMO Regional Configuration Toolbox*	Kevin O'Neill (9/STFC)	9	Started 01/10/14

eCSE Call 3: Project List

eCSE ID	PI (Institution)	Title	Technical Staff (PMs/Institution)	Total PMs	Status
eCSE03-1	Prof. Tony Arber <t.d.arber@warwick.ac.uk> (Warwick)	*Optimisation of the EPOCH laser-plasma simulation code*	Michael Bareford (12/EPCC)	12	started 01/12/2014
eCSE03-2	Dr. Michele Sergio Campobasso <m.s.campobasso@lancaster.ac.uk> (Lancaster)	*Reducing the run-time and improving the ease-of-use and portability of the COSA 3D harmonic balance Navier-Stokes solver for open rotor unsteady aerodynamics*	Neelofer Banglawala (7/EPCC)	7	started 01/11/2014
eCSE03-3	Dr David J Huggins <djh210@cam.ac.uk> (Cambridge)	*Algorithmic Enhancements to the Solvaware Package for the Analysis of Hydration*	Arno Proeme (6/EPCC)	6	starting 12/01/2015
eCSE03-7	Dr Matthew Piggott <m.d.piggott@imperial.ac.uk> (Imperial)	*Delivering a step-change in performance and functionality to the Fluidity shallow water solver through code generation*	Christian Jacobs (12/Imperial)	12	starting 01/02/2015
eCSE03-8	James R. Maddison <j.r.maddison@ed.ac.uk> (Edinburgh (non EPCC))	*Parallel supermeshing for multimesh modelling*	Iakovos Panourgias (8/EPCC)	8	started 01/12/2014
eCSE03-9	Dr Dan Jones <dannes@bas.ac.uk> (BAS)	*Providing the ARCHER community with adjoint modelling tools for high-performance oceanographic and cryospheric computation*	Gavin Pringle (4/EPCC) Sudipta Goswami (5/BAS)	9	started 01/01/2015
eCSE03-10	Dr Garth Wells <gnw20@cam.ac.uk> (Cambridge)	*High performance multi-physics simulations with FEniCS/DOLFIN*	Chris Richardson (6/Cambridge)	6	started 01/12/2014
eCSE03-11	Dr Matthew B Watkins <matthew.watkins@ucl.ac.uk> (UCL)	*local excitement in CP2K*	Matthew Watkins (12/UCL)	12	starting 01/04/2015
eCSE03-12	Xuerui Mao	*Full parallelism of calculations of*	David Smith (12/Durham)	12	starting

	<xuerui.mao@durham.ac.uk> (Durham)	*optimal flow control*			01/03/2015
eCSE03-13	Dr Rupert Nash <rupert.nash@ed.ac.uk> (EPCC)	*Grids in grids: hierarchical grid generation and decomposition for a massively parallel blood flow simulator*	Rupert Nash (10/EPCC) Derek Groen (2/UCL)	12	started 01/01/2015