# ARCHER Service Update

15 Oct 2014

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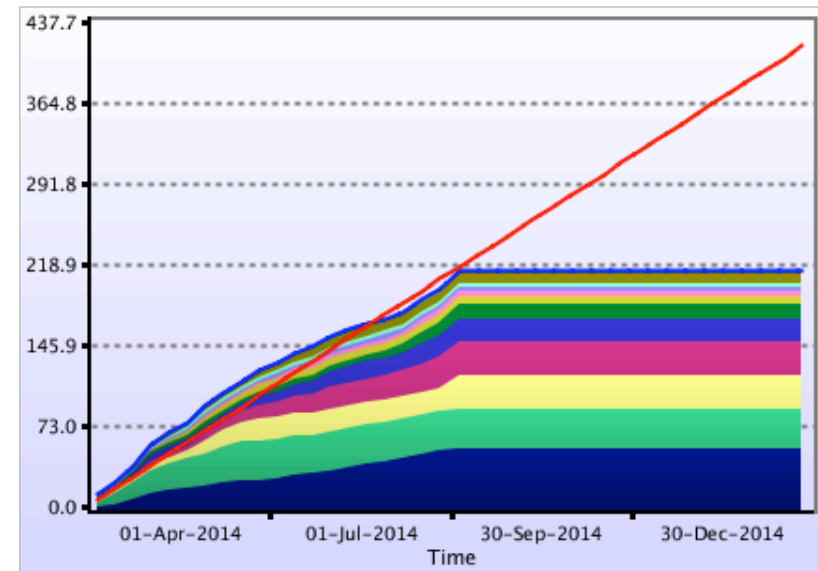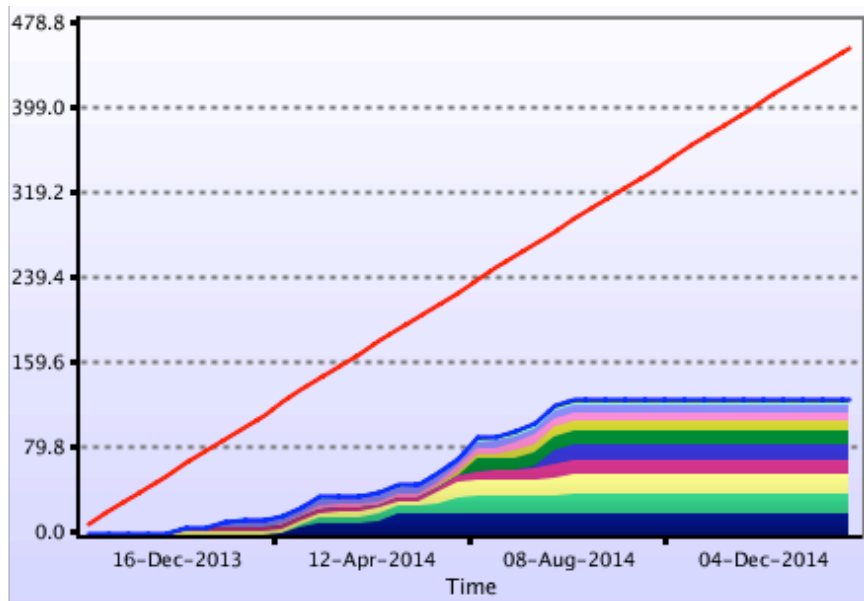Liz Sim, *ARCHER SP*

# SP Service Improvements

- System Configuration
  - Debug Queue added
  - Reservations now available via SAFE
  - Budgets checked on job submission (prevents budget overspend)
- Communications and Reporting
  - Updated SAFE reports on utilisation and allocations
    - Primarily for Consortia and RAP
  - You Tube videos now available for SAFE common actions
  - 6-monthly indicative maintenance schedule now online
  - Module catalogue and history
  - Twitter feed and links to blog articles
- Novel Changes
  - ARCHER App for mobile devices available

# Updated Utilisation Reports

# SP Future Plans

- ARCHER Website
  - Refactoring ARCHER website
  - Addition of public-facing pages
  - Target completion Q4 2014
  - Further enhancements to User Documentation
- SAFE Changes
  - Add mechanism to SAFE to enable users to register publications
  - Report on power/memory usage of jobs
  - Regular usage reports emailed to PIs
  - Training course registration via SAFE

# CRAY CoE Service Improvements

- Application engagement
  - Python in HPC
  - UM/n02 engagement (in collaboration with CSE)
    - Investigating occasional slowdown for some of their large climate simulations
  - Investigations into running Hadoop on ARCHER
    - Access to this framework provided through the Cray system "swan"
  - Support for eCSE project – CESM porting onto ARCHER
  - UKTC/SBLI: helping with performance of a coarray Fortran version of SBLI code
- Training/user visits
  - PRACE I/O optimisation workshop at Daresbury
  - Invited talk/demonstration on Reveal at the Multicore Challenge 2014 conference
  - CUG2014 – runner-up for best paper on power monitoring
  - Visit to the UKTC Workshop 2014
- Misc
  - Cray CoE for ARCHER webpage - http://www.archer.ac.uk/community/craycoe

# CRAY CoE Future Activities

- Application engagement
  - Continuing engagement with n02/UM users to better understand their IO issues
  - Improve performance of the Coarray Fortran communication model in SBLI
  - Acceptance related activities for Phase 2 system
- Further user engagement/visits
  - CoE is giving an OpenACC tutorial at SC14
  - CoE has been invited to attend and speak at the Centre for Doctoral Training in Pervasive Parallelism kick-off and Industrial Engagement event
  - Reviewing proposals for the next eCSE round and attending review meeting
- Further Cray training events?
  - Bulk of training covered by CSE
  - Cray will contribute where there is added value for particular topics, e.g.,:
    - Cray Programming Environment updates
    - Programming for GPUs/OpenACC
    - PGAS

# CSE Current Status

- Number of In-Depth technical queries has reduced compared to start of service
  - 46 resolved in Q3 (80 in Q2, 97 in Q1)
  - Users are becoming more familiar with the system; not as many requests for new software installations
  - Pushed more effort into proactive technical activities: investigations into getting best out of, for example, parallel IO or Python; functionality around power monitoring of user jobs
- High demand for training continues
  - Particularly for Software Carpentry, Introduction to HPC, Python
  - 22 training days in last quarter at 7 different locations
  - Training the trainers: trial in Sheffield

# CSE Future Plans

- Development of a series of screencasts on common ARCHER tasks, e.g.:
  - Using profilers and debuggers
  - Understanding compiler optimisations
- Case studies for ARCHER public-facing web pages
- Training plans for 2015:
  - Joint ARCHER/DiRAC training event on Xeon Phi programming
  - Development of coordinated training programmes to develop UK HPC skill base
- Develop material to broaden ARCHER user base:
  - Aimed specifically at early career researchers in non-traditional HPC research communities
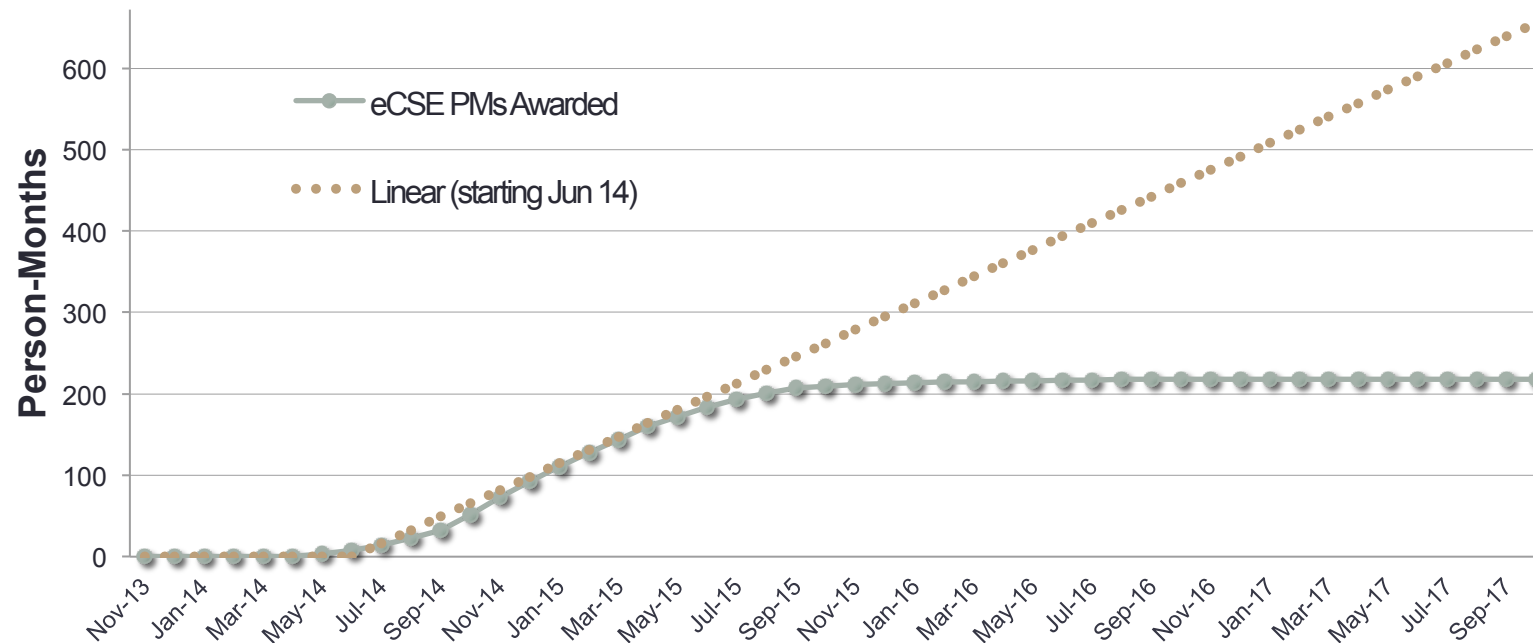- Consortium Contacts to develop links with largest users in their communities

# eCSE Current Status

- Continual improvement of process through feedback from applicants and panel members
  - Improved guidance for technical reviewers
  - Virtual tutorial and technical forum held on submission process
- Application and review now online through SAFE
- Templates for reports have been agreed
- Initial interim reports received for eCSE-01 projects
- High demand for eCSE funding continues:
  - eCSE-01: 19 proposals (funded: 14 projects, 132 months staff effort)
  - eCSE-02: 17 proposals (funded: 9 projects, 82 months staff effort)
  - eCSE-03: 16 proposals
- 214 PMs awarded (out of 672 PMs)

# eCSE Effort Profile



- Linear trend shown for guidance (from June 14)
- Committed to at least 14 FTEs/672 PMs
  - More if funding permits

# eCSE Future Plans

- Continue to gather feedback from applicants, panel and technical reviewers to improve processes and information
- SAFE development to streamline online application and review
- Remit of eCSE programme includes codes that do not currently utilise ARCHER – but will be able to on completion of an eCSE
  - Some proposals may be more suited to "institutional/regional eCSE"
- Want to encourage applications from new communities
  - While still supporting the UK's established code base
  - Investigating ways to ensure the submission process is appropriate for both new communities and established codes
- Aim to support and monitor early career researchers
  - Throughout the lifetime of the ARCHER service

http://www.archer.ac.uk
support@archer.ac.uk

# Core Elements of ARCHER CSE

- *Supporting UK academic researchers to perform world-leading numerical simulations and experiments*

- Training around UK
- Answering in-depth queries
- Documentation and website
- Running eCSE programme

- Novel engagement with users
  - Consortium Contacts
  - Virtual Tutorials
  - Technical Forum
  - Annual prizes for best research paper and best scientific image

# Additional Benefits

- Annual themed workshops
- Produce a MOOC (Massive Online Open Course)
- Support and encourage early career researchers
- Industrial outreach and collaboration
- Women in HPC
- Showcase the scientific output and impact, e.g., via a publication database and case study library
- Training the trainer
- Outreach, e.g., to science festivals
- Develop and sustain codes and communities from new areas
- Strengthening links within HPC ecosystem

# Strategic Questions

- Prioritisation of additional benefits
- What activities are (or are not) valued?
- How should ARCHER Training interact with CDTs?
    - Training the trainers to make this sustainable
- Target audiences for MOOC and Outreach?
    - General public, students, early career researchers, …
- How should the eCSE programme balance the development of new areas with improving the high quality existing code base?
    - Separate calls, directed funding streams within a call, …
- Focus for annual workshops?
    - Big data, energy, environment, …
- Industrial v. academic usage?

- ***EPCC want to ensure that CSE effort is targeted at areas that match Research Councils' and Users' priorities***