Growth of an RSE Team in Durham
Ed Ruck-Keene

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Ed Ruck-Keene is the Business Development Manager of the Advanced Research Computing (ARC) Directorate at Durham University.

Alongside Alan Real, Director of ARC, over the last two years they have been working to create and develop ARC into an effective team to support university departments with sustainable software engineering and HPC.

Can you give us an overview of the project?

The idea of an Advanced Research Computing (ARC) Unit at Durham University can be traced back to the summer of 2017 when the University committed to the creation (and agreed to underwrite the funding) of a computational support unit for researchers across all faculties.

The basic plan involved creation of create two teams, firstly the research software engineering group and secondly the research and computing platform group to run and maintain "Hamilton", the university's major HPC Facility, and other clusters.

A secondary objective was to mark out Durham as a centre of excellence for research computing through the close interoperation of these teams and coordination of communities of practice..

Creating a department from scratch has required a great deal of discussion with the University's senior management, administration, and approval of business plans to release funds and eventually

recruit to the new positions. The first RSE team member started work in September 2019; almost two full years since the project began.

The key was to create a team of experienced RSEs from a diverse range of backgrounds, including both industry and academia. The current RSE team comprises three individuals and there is an overlap between each of their skills which gives the team enormous flexibility.

Structure

ARC report directly to the vice-Provost of Research and from there, straight to the University's executive committee.

This operational independence from individual departments or central IT Services means that ARC is accountable to research, has neutrality from any particular domain, whilst adopting a 'member of research team', rather than 'service' approach: an important factor in the career development of an RSE.

Developing Partnerships

During December 2019 ARC conducted a survey of research groups to help to understand the needs of researchers and to identify projects that require support. This yielded over 300 responses, 90 contact requests and led to 30 projects or potential projects.

In addition, ARC have spoken to every department in the university to highlight their work. Through their detailed fact-finding it became clear that in addition to requiring sustainable software for research, researchers across the university needed training.

Courses in common platforms and languages including GitHub, Python, Data Science and Machine Learning have been incredibly popular and were heavily over-subscribed. They will be repeated, expanded into other areas, and will become a regular feature.

The group also joined forces with the Durham Research Methods Centre (statistical methods unit) to offer a drop in café where people can discuss their computational problems, code that needs improvement or to consider a project that they wish to get off the ground.

The RSE group have been very active in networking and participation in hackathons and workshops both internally and externally with other Universities, the Society of Research Software Engineers and the Software Sustainability Institute. The activity raises both their personal profiles and also that of ARC.

Cost Recovery leads to Growth

It is important that RSEs have a variety of project experience: therefore to ensure that ARC can support as many projects as possible, each one can have up to 40% of their time costed against a single research grant or project and can have a maximum of 80% of their total time committed across multiple projects.

Despite these restrictions it is currently projected that if all the current grant proposals are funded, each RSE will have work to cover 120% of their time! The operational model allows for the ARC team to grow to support additional externally funded work.

Since 2019, with the assistance of the other N8 partners, funding for the new BEDE supercomputer (Northern Intensive Computing Environment) has been achieved. When commissioned in Durham in 2020, this will bring more opportunities for the recruitment of staff for both the RSE and Platforms teams.

ARC's RSE Contingent

Alison Clarke

Alison Clarke has a degree in computer science and has spent around 15 years working in various sectors of industry including defence, marketing and the financial sector.

She has used a range of programming languages since 2004 including Python, Java and PHP. As well as this work Alison has experience in infrastructure and DevOps work.

![N8 CIR logo](COMPUTATIONALLY INTENSIVE RESEARCH)

Since joining ARC as an RSE in September 2019 has worked on a number of interesting projects including DREX, HEPData and OpenPose. Each of these projects have posed unique challenges with DREX needing an update from its original 2015 build before completing bug fixes whilst OpenPose needed significant data cleaning before research can be undertaken.

Marion Weinzierl

German equivalent of a Masters in computer science, after which she completed a PhD in scientific computing for computational fluid dynamics. After this Marion came to Durham as a post doc in the maths department working with the computational solar physics code and space weather prediction research and collaboration with the Met Office and US Air Force.

Since joining ARC in October 2019 Marion has continued her computational science work as well as collaborating with the geography department to re-factor code for ice sheet modelling, testing and CI for solar corona simulation code and worked on optimisation algorithms in econometrics.

Jonathan Frawley

Following the completion of a Masters in computer science, Jonathan worked in industry for around 10 years, primarily as a back-end software engineer. He has experience in online gaming, banking and medical imaging. He is currently working towards a PhD in deep learning. Since joining ARC in December 2020 he has focused on deep learning and C/C++ projects.

Jonathan has worked with the sports science department to track and identify player movement on the field and detect concussions. Another project will see Jonathan work to improve speech recognition software within noisy classroom environments. There are also new projects with the chemistry department, DiRAC operations grant in SWIFT for astronomical analysis and sentiment analysis of Twitter data with the English department.