

Imperial College HPC Summer School

Research Software Engineering (RSE) Session

1pm– 3pm, Thursday 1st October 2015

Lecture Theatre 308, Huxley Building

The Research Software Engineering session will take place at the Imperial College HPC Summer School from 1pm-3pm on Thursday 1st October 2015. See the session overview (below) for details on the motivations and aims for this session.

AGENDA

Introductory Talks

A pair of introductory talks providing a view on what Research Software Engineering is, why Research Software Engineers (RSEs) are important for the UK computational science community and what is already happening in this area.

13:00 Welcome and Session Introduction

(Jeremy Cohen, Department of Computing)

- What is Research Software Engineering?
- Why is it important to the UK computational science community and what should we be doing about it?

13:10 Current RSE activities in the UK academic community

(Mark Stillwell, Department of Computing)

- What is happening already in the UK in terms of an RSE community?
- How might we get involved and work with the existing community?
- How can Imperial build upon existing activities?

Opportunity for initial questions/comments

Domain Presentations

Four short talks giving the perspectives of 2 computational scientists and two Research Software Engineers from a set of different domains.

The Computational Scientist's Perspective

Short talks from two computational scientists who rely on software and advanced infrastructure to support their research. What are the challenges they and their groups/colleagues face? What significance do they attach to software engineering within their group/team?

13:30 Matthew Foulkes, Department of Physics

13:40 Radu Cimpanu, Department of Mathematics

The RSE's Perspective

Short talks from two researchers undertaking research software engineering-type roles highlighting the challenges they help to solve and how their work supports others within the domains in which they work.

13:50 Chris Cantwell, Department of Aeronautics

14:00 Michael Lange, Department of Earth Science and Engineering

Panel discussion

14:10 Panel discussion

Panel Members (TBC):

Chair: Jeremy Cohen, Department of Computing

- Gerard Gorman, Department of Earth Science and Engineering
- Matthew Foulkes, Department of Physics
- Miguel Oliveira, ICT HPC Service
- Jazz Mack Smith, Bioinformatics Support Service, Department of Surgery & Cancer
- Lawrence Mitchell, Department of Computing

The panel discussion will provide an opportunity for the audience and panel to investigate some of the issues raised in the first part of the session. The panel includes academics, researchers, and developers. Some possible issues for discussion include:

- Different models for RSE-type posts – a centralised team or distributed across domains
- How important are RSEs in different domains? Is there a consistent requirement for such expertise across scientific domains?
- Sustainability of RSE roles
- Impact, opportunities and career paths

14:50 Wrap-up, follow-ups and closing remarks

15:00 Session close

Session Overview

Software Engineering has been a key aspect of large-scale scientific work for many years and individuals with specialist skills in the development of scientific software, in addition to domain knowledge, are now often key members of computational science research groups. However, as software and computational infrastructure have become more complex, these individuals need increasingly large skill sets and the knowledge of how to apply their skills within a research context. Despite their important profile, supporting such roles can be a challenge for PIs and the individuals undertaking this work often need to combine their software development work with other postdoctoral research tasks.

The term Research Software Engineering (RSE) has been coined to describe the work undertaken by computational software developers working within research groups and an RSE community has begun to emerge in the UK (<http://www.rse.ac.uk>). This represents an important step in formally recognising the role of computational software developers who understand the research environment and research processes. Nonetheless, there is generally a lack of long-term sustainability for RSE roles and they often become a step on a route to a more traditional academic career as a means for RSEs to ensure stability and a long-term career path. There is, however, increasing recognition of the need to find ways to maintain the vast technical knowledge and expertise that RSEs build up and, for those who wish to remain in a software development-focused role, to find long-term career options.

This session, consisting of six short "lightning talks" and a panel discussion, will bring together Research Software Engineers (RSEs), computational scientists and research leaders to look at the benefits and challenges of RSE roles from a range of different perspectives. It will highlight the specific challenges that come with modern large-scale computational software and associated research and look at the skills and capabilities that RSEs can bring to a research team to help address these challenges.