Role Description Form

Job Title:	Senior Research Software Engineer (RSE)
Job Holder(s):	TBA
Sub Department:	n/a
Department:	Scientific Computing Research Technology Platform
Responsible to (title and name):	[redacted]
Responsible for (title and numbers): n/a	n/a

Job Purpose: To provide software engineering expertise, support and training to users of the Scientific Computing Research Technology Platform, promoting best practices at all stages of the research software development cycle and ensuring sustainability of bespoke software created for research.

Principal Accountabilities	**%**
1. **Technical**	
a. Design and plan software solutions to meet the needs of research projects, working with project managers and academic project leads to define scientific requirements and financial/time constraints.	5
b. Employ scientific programming, web development and database management techniques in support of academic research. This will include periods of secondment to specific research projects.	30
c. Document, maintain and monitor research software solutions to ensure longevity and sustainability of solutions.	5
d. Maintain an awareness of new and emerging technologies in software engineering.	10
2. User engagement and support	
a. Deliver specialist support in deployment and testing of research software on Linux-based computing facilities hosted at Warwick and at other institutions accessed by Warwick researchers.	20
b. Curate a web-based resource linking Warwick researchers to available web-resources and UK-based training opportunities in research software development.	5
c. Develop documentation and training for Warwick researchers in research software engineering and software carpentry.	10
d. Engage users (including graduate students) and disseminate best practices in research software engineering for sustainability.	5
e. Liaise with peers and research project partners at other Institutions, coordinating training activities and engaging with the UK RSE community.	5
3. Financial & managerial	
a. Monitor and report effort expended by RSE activities in support of projects as required by external funding bodies.	5
b. Work with academic colleagues to secure funding for RSE activity at Warwick, recruiting and supervising additional RSE staff as required to meet demand.	
4. Health and safety	
a. Work within established health and safety procedures liaising with the Estates Office and University Security where needed.	

Knowledge, Skills and Experience	
Qualifications	Degree or equivalent in a scientific discipline relevant to scientific computing or equivalent experience; higher degree desirable but not essential.
Professional Qualifications	
Previous Experience	a. Experience of the academic research software development cycle, including development, deployment, maintenance and user support b. Experience of working as part of a highly skilled technical team c. Experience of supporting expert and non-expert users of research computing facilities and software d. Development of documentation and training material in scientific programming and/or software carpentry
Knowledge and Skills	**1. Specialist skills** a. Expert knowledge of working within a Linux computing environment. b. Detailed working knowledge of multiple programming and scripting languages, include Python and at least one compiled language (C/C++/Fortran) widely used for high performance scientific computing. c. Experience of building and working with parallel applications (MPI and shared memory programming e.g. OpenMP). d. Good awareness and experience of co-processing technologies such as GPGPUs, Xeon Phi and other emerging hardware. e. Ability to write clear and concise technical training material f. Proficient in the use of revision control systems g. Ability to install and configure software packages, including web-servers, databases and scientific simulation packages **2. Core skills** a. Good interpersonal skills b. Ability to apply specialist knowledge and skills to complex problems c. Excellent written and verbal communication skills d. Ability to train others e. Proven organisational and time management skills f. Ability to prepare and deliver technical presentations to diverse audiences with varying levels of background knowledge
Other Information	
Dimensions	
Financial	Responsible for the delivery of work packages within broader research projects equivalent to budget of £100k p.a. Involved in development, writing and submission of research projects with a typical value of several £100k.
Operational	Ensures efficient use of ~£2M of university research computing equipment via consulting on development of optimised and validated software. Reduces duplication of effort by research staff by advising on development of reusable software.
Staffing – Supervision Given	Provides expert advice across a wide audience (see “Communication” section below). Advises junior researchers, engages with graduate students and other researchers to disseminate optimal working practice.

Staffing – Supervision Received	Line managed by the SC RTP director and research project leaders with minimal day-to-day guidance and supervision.

Planning and Organising

What is the furthest ahead the job has to plan?

~~Daily~~		~~Weekly~~		~~Monthly~~		~~Quarterly~~		~~Annually~~		**Longer**	

Which Principal Accountability does this relate to?	1a, 1c, 3b

Please provide an example of the work the post plans in advance (using the longest timescale).

Planning the maintenance, distribution, and revision lifecycle of research software and web resources which may have a useful lifetime of 10+ years spanning several funding cycles and graduate student cohorts.

Communication

This role requires communication with a wide range of people:

Research active academic staff, research-only staff and graduate students involved in developing, deploying or using research software across the university.

Departmental administrators and support staff.

Industrialists using the facilities on a commercial or collaborative basis.

SC RTP Director, Facilities Manager and team members.

RSE peers at other Higher Education Institutions, and the UK RSE network.

Decision Making

Typical Decision	Prioritisation of effort between maintenance and support of existing software versus implementation of new functionality and documentation.
Most Complex Decision	Choosing appropriate technology on which to base new research software projects and training material. Balances time to solution against maturity and likely longevity of the available programming languages and software stacks.
Supplementary information	Post approval - **ARC.16-17/133**
Special circumstances	

Signatures:

	Signed	Printed
Head of Department	----------	----------
Line Manager	----------	----------
Job holder/s	----------	----------
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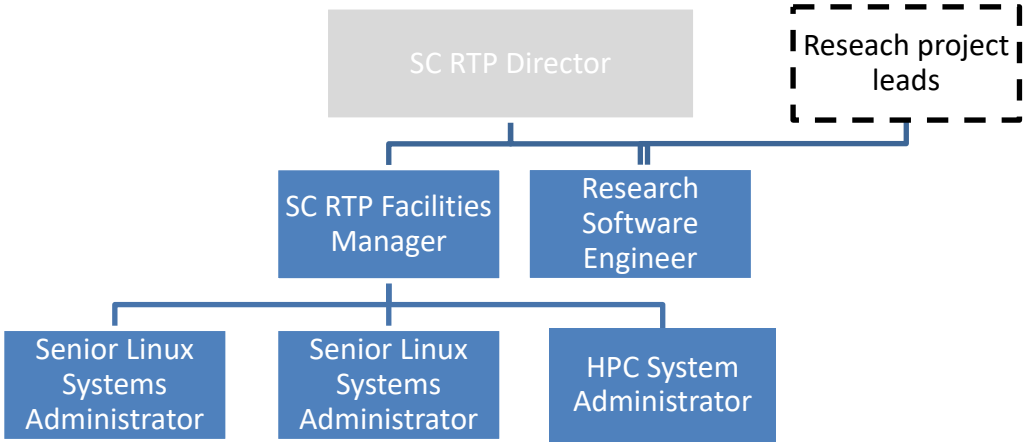
SC RTP Director
Reseach project leads
SC RTP Facilities Manager
Research Software Engineer
Senior Linux Systems Administrator
Senior Linux Systems Administrator
HPC System Administrator