SOFTWARE SUSTAINABILITY INSTITUTE

RSE

SOCIETY OF RESEARCH SOFTWARE ENGINEERING

The growth of Research Software Engineering and its vital role in research

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Martin O'Reilly
Trustee | Society of Research Software Engineering
Director of Research Engineering | Alan Turing Institute

https://doi.org/10.5281/zenodo.1139999

www.software.ac.uk

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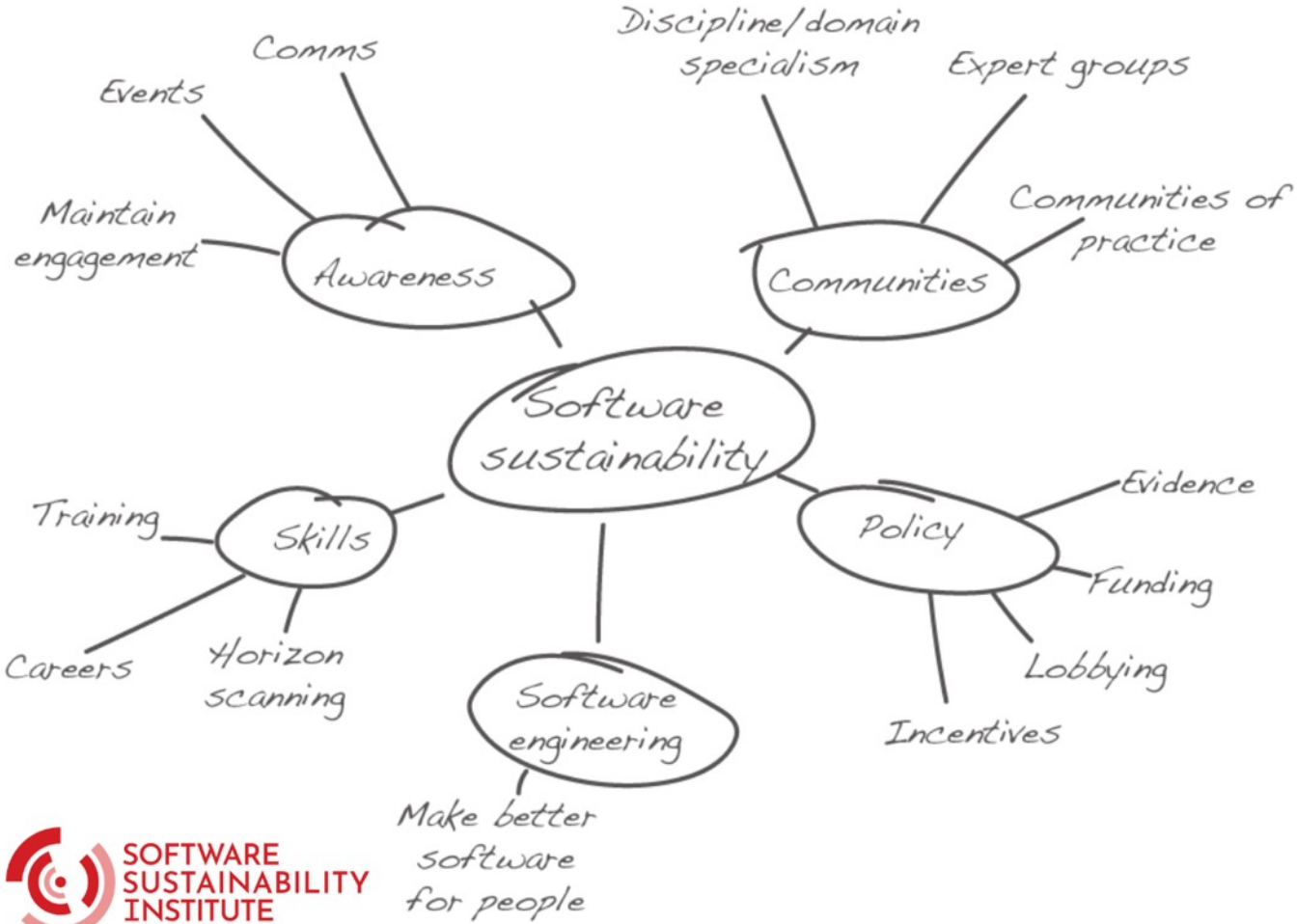

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Importance of research software

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“

Research software *is software that you use to generate, process or analyse results that you intend to appear in a publication.*

It can be anything from a few lines of code written by yourself, to a professionally developed software package.

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*The **Research Software Engineer** is a new role in research.*

It combines an intimate understanding of research with professional software engineering expertise

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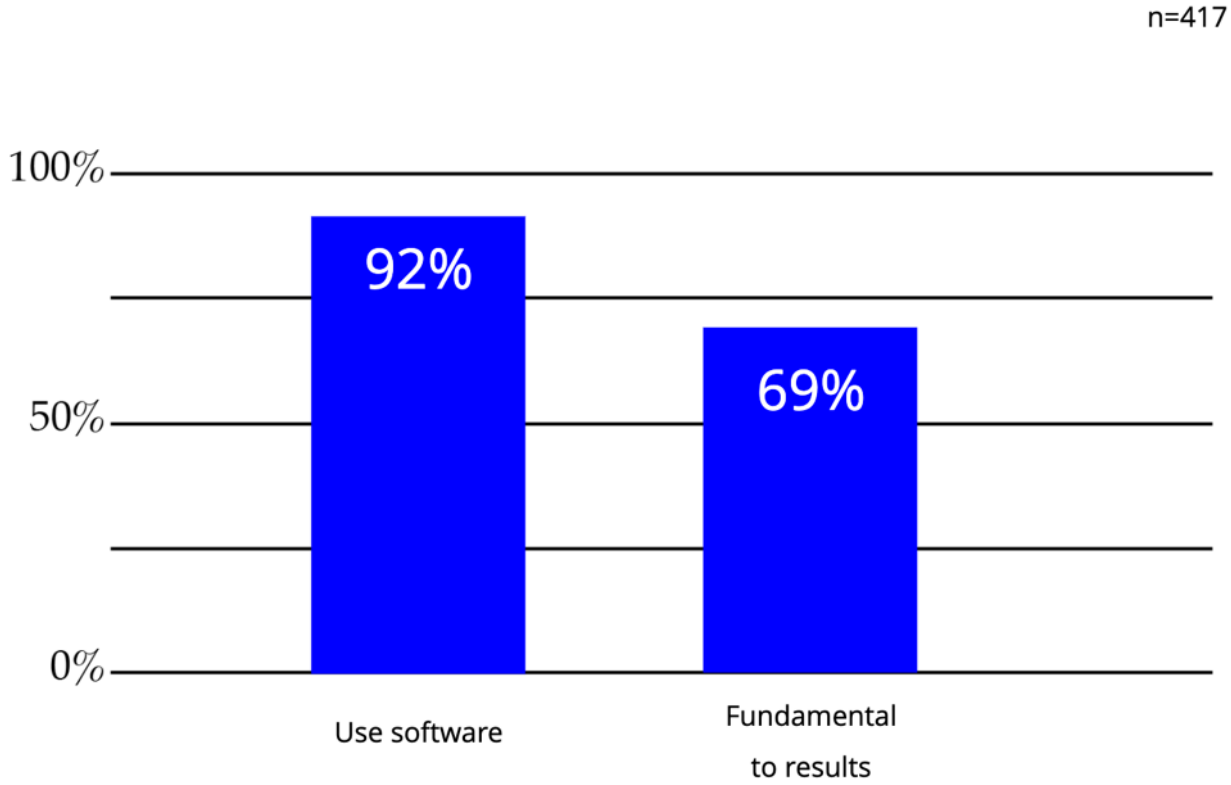
Use and importance of software



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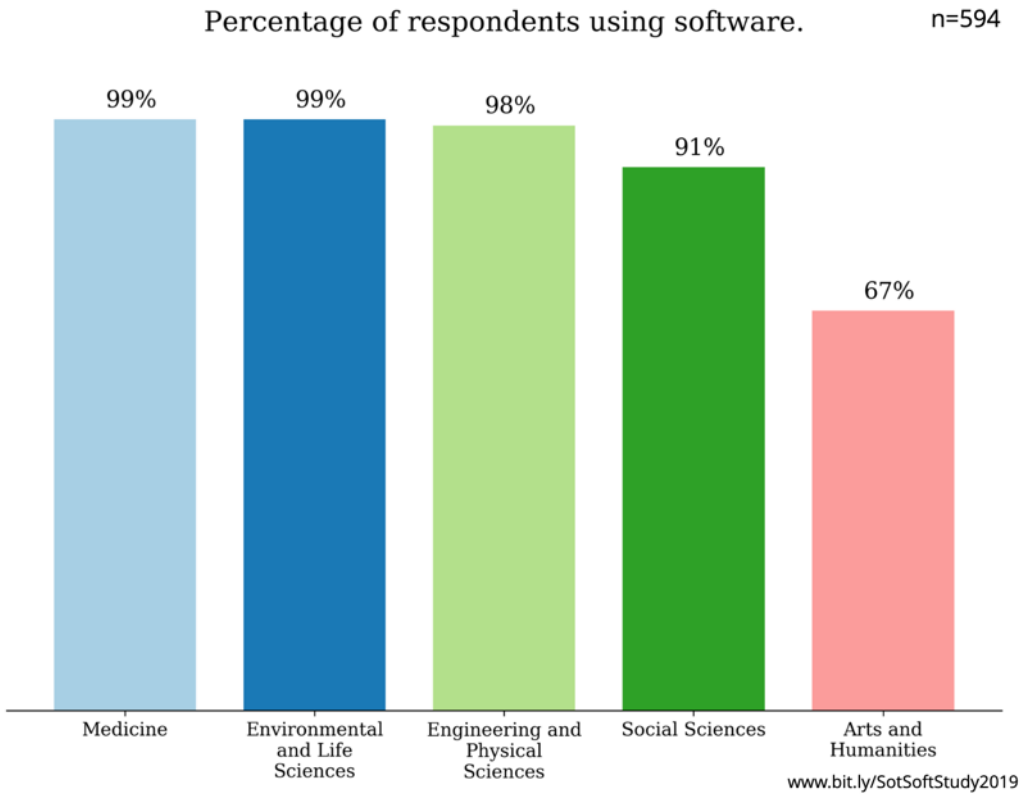
Use and importance of software



https://www.bit.ly/SotSoftStudy2019

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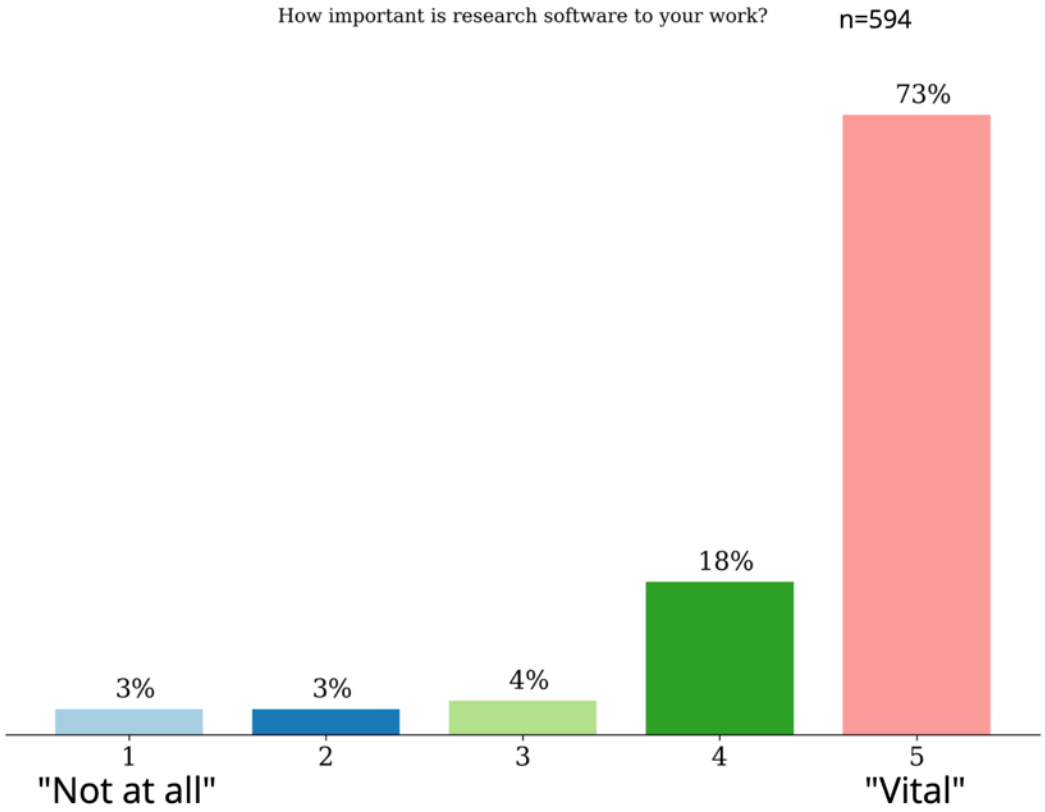
Use and importance of software



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Growth of RSE in the UK

...

Grassroots movement to professional Society

RSE name and first RSE Group

2012

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Grassroots movement to professional Society

RSE name and first RSE Group

First RSE Workshop

2012 **2013**

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A workshop for research software engineers

By Simon Hettrick, Deputy Director.

The first workshop for Research Software Engineers took place on 11 September 2013 and is described below. A second workshop will take place in mid-2014 and will be announced on this website.

Research software engineers are the people behind research software. They not only develop the software, they also understand the research that it makes possible. Software is a fundamental part of research, and research software engineers are fundamental to good software. Despite this, the role is not well understood in the research community, and this is something the Software Sustainability Institute is campaigning to change - starting with a workshop for research software engineers.

The first workshop for Research Software Engineers

The free workshop will bring research software engineers together to discuss their work, to network, and to work on ideas that will bring recognition and reward to their role. It will be held on 11 September 2013 directly after the **Digital Research conference**. It will be held at the Oxford eResearch Centre. You can **register now on our Eventbrite site**.

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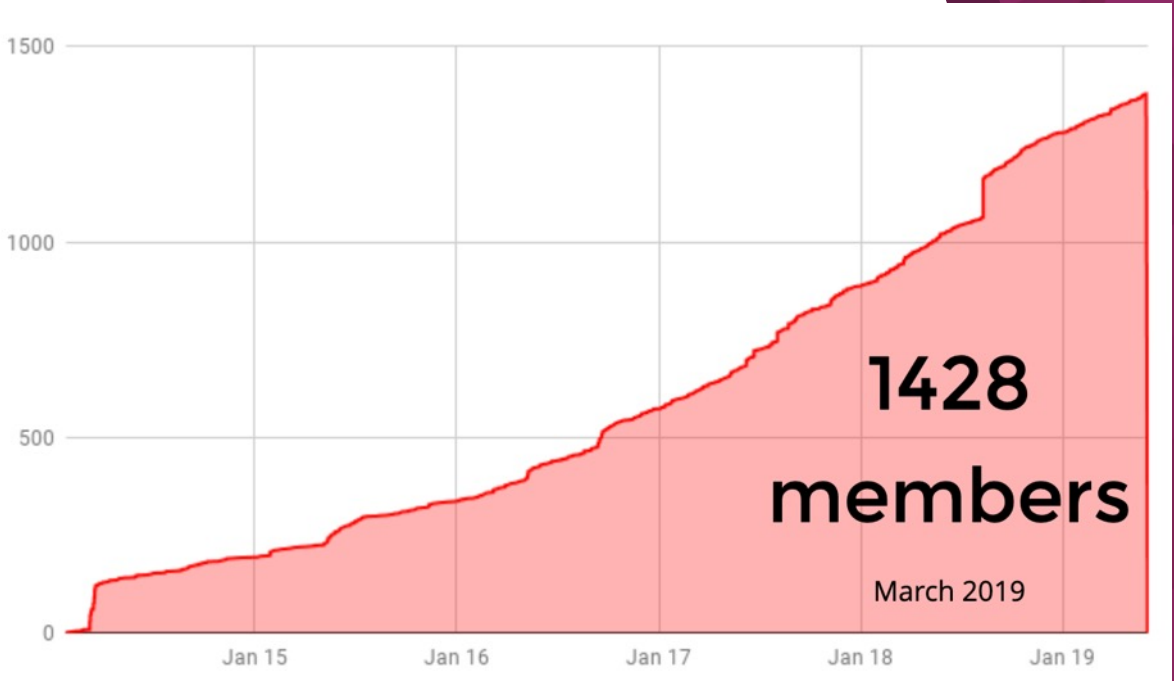
Grassroots movement to professional Society

RSE name and first RSE Group — **2012**

First RSE Workshop — **2013**

UK RSE association founded — **2014**



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Grassroots movement to professional Society

RSE name and first RSE Group — 2012

First RSE Workshop — 2013

UK RSE association founded — 2014

First RSE fellowships — 2015

Research Software Engineer (RSE) Fellowships

Issue date:	13 May 2015
Opening date:	13 May 2015
Closing date:	21 July 2015 at 16:00
Status:	Closed
Tag:	Invitation for proposals
Related theme:	Research Infrastructure

This call will support Research Software Engineer (RSE) Fellowships for a period of up to five years. The RSE Fellowship describes exceptional individuals with combined expertise in programming and a solid knowledge of the research environment. The Research Software Engineer works with researchers to gain an understanding of the problems they face, and then develops, maintains and extends software to provide the answers.

To support the role of RSEs and establish a cohort in the academic environment, up to £3m is available for this pilot call. Candidates are invited to provide an 'Intent to Submit' document in the first instance to register interest. Full proposals will be subject to a rigorous peer review and sift process before a final selection by interview.

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Grassroots movement to professional Society

RSE name and first RSE Group — 2012

First RSE Workshop — 2013

UK RSE association founded — 2014

First RSE fellowships — 2015

First RSE Conference — 2016

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Grassroots movement to professional Society

RSE name and first RSE Group — 2012

First RSE Workshop — 2013

UK RSE association founded — 2014

First RSE fellowships — 2015

First RSE Conference — 2016

International RSE leaders meeting — 2018

International RSE Leaders Workshop

April 23, 2018

By Alys Brett, UK Atomic Energy Authority / UK RSE

In January 2018, leaders of Research Software Engineering groups, networks and initiatives from around the world gathered in London for the first ever International RSE Leaders workshop, organised by UK RSE. The event generated huge enthusiasm and progress towards the goal of improving access to software expertise in research by pooling knowledge, coordinating efforts and establishing collaboration.

International momentum

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Grassroots movement to professional Society

RSE name and first RSE Group — 2012

First RSE Workshop — 2013

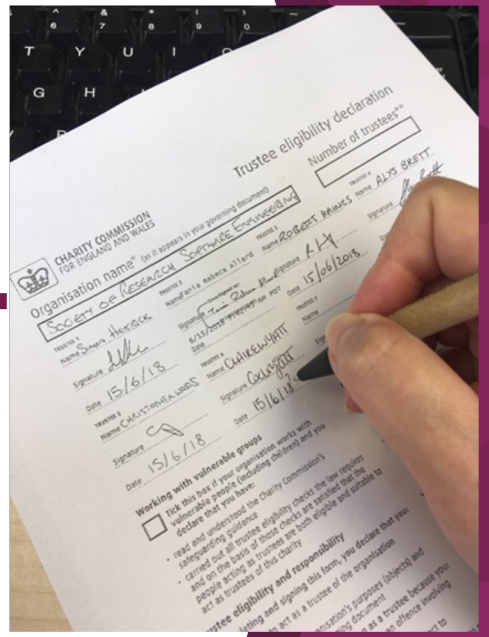
UK RSE association founded — 2014

First RSE fellowships — 2015

First RSE Conference — 2016

International RSE leaders meeting — 2018

Society of RSE founded — 2019



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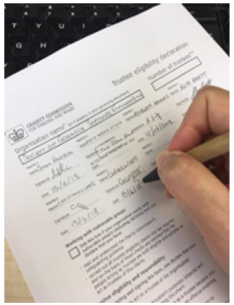
Grassroots movement to professional Society

2012	2013	2014	2015	2016	2018	2019	2021
RSE name and first RSE Group	First RSE Workshop	UK RSE association founded	First RSE fellowships	First RSE Conference	International RSE leaders meeting	Society of RSE founded	Mentorship programme launched



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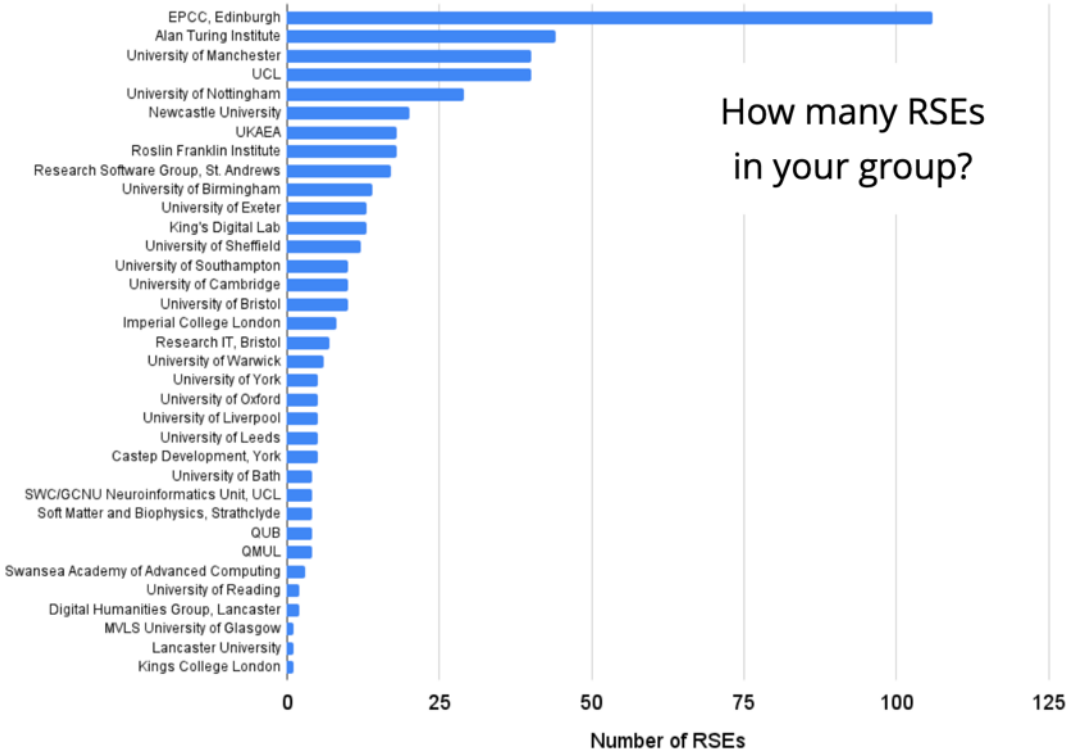
RSE today

...

UK RSE Groups



https://github.com/softwaresaved/RSE-Group-Leaders-Survey-2023_Python

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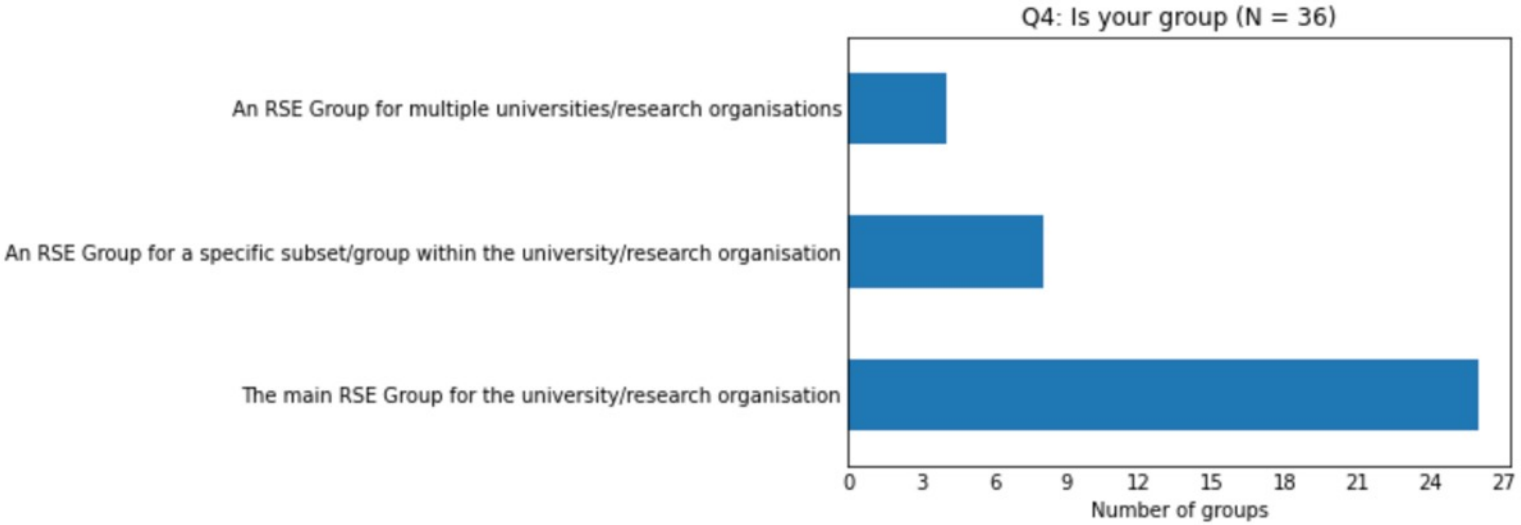
UK RSE Groups



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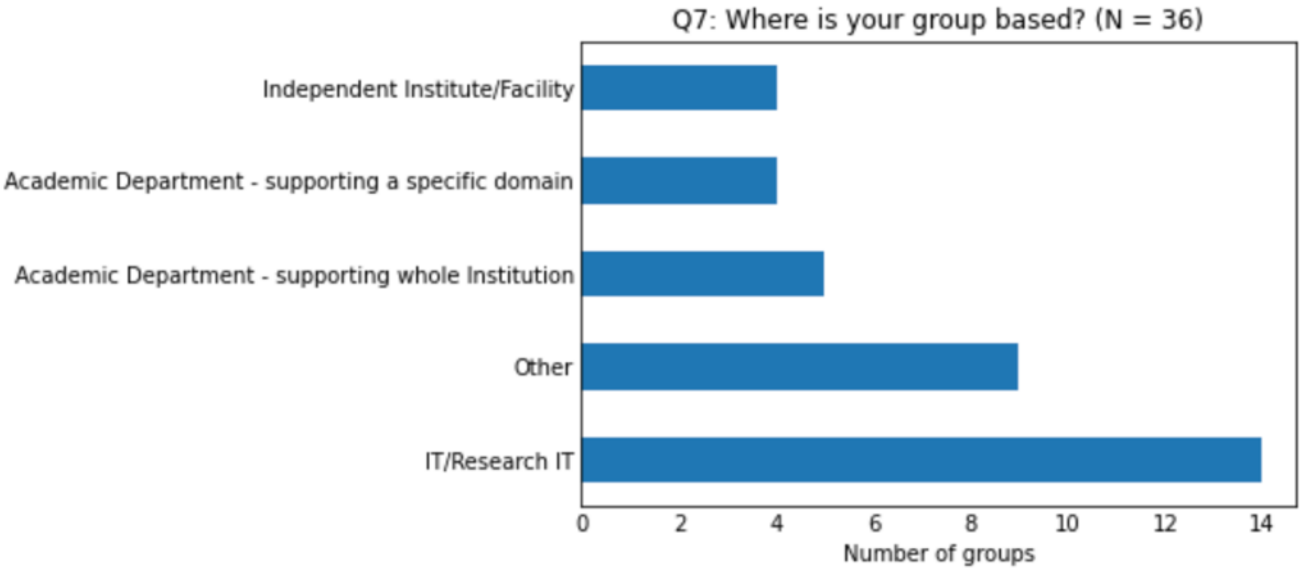
UK RSE Groups



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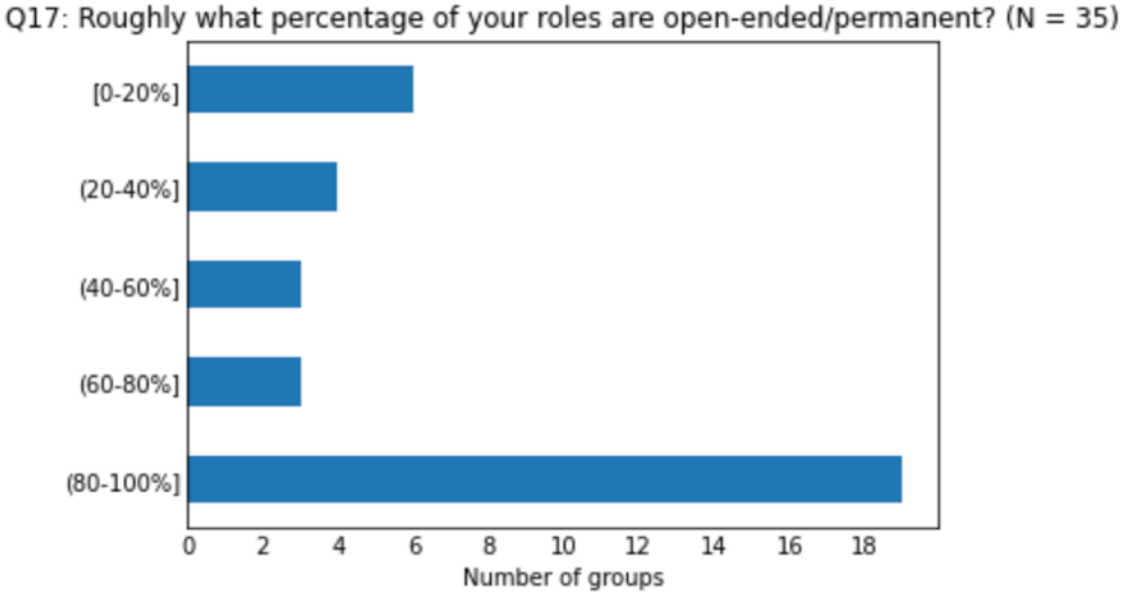
UK RSE Groups



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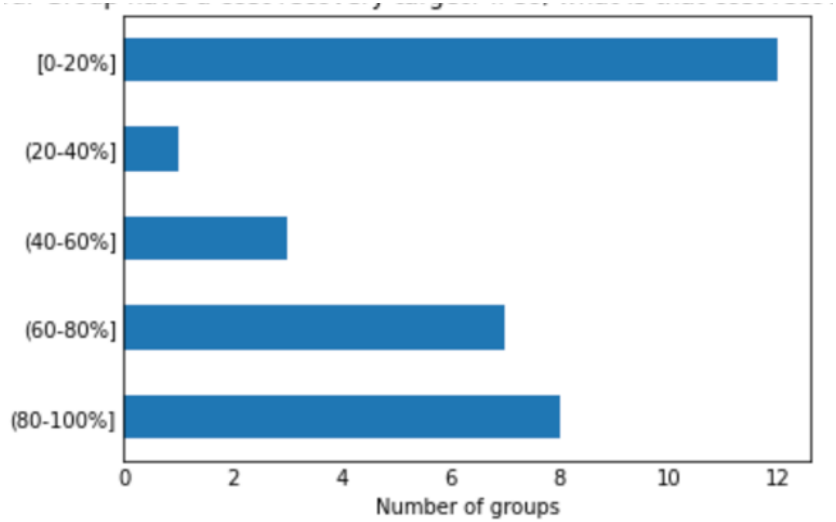
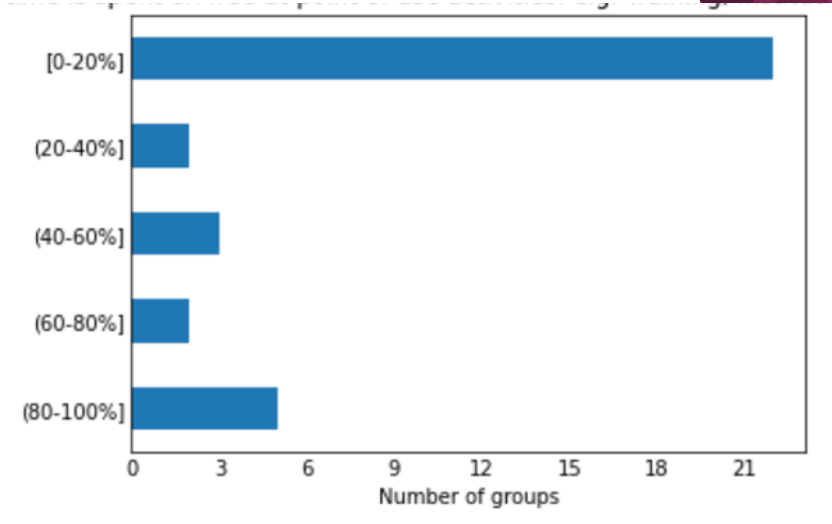


Target for fraction of group costs that must be charged to projects



Fraction of time that is free to researchers

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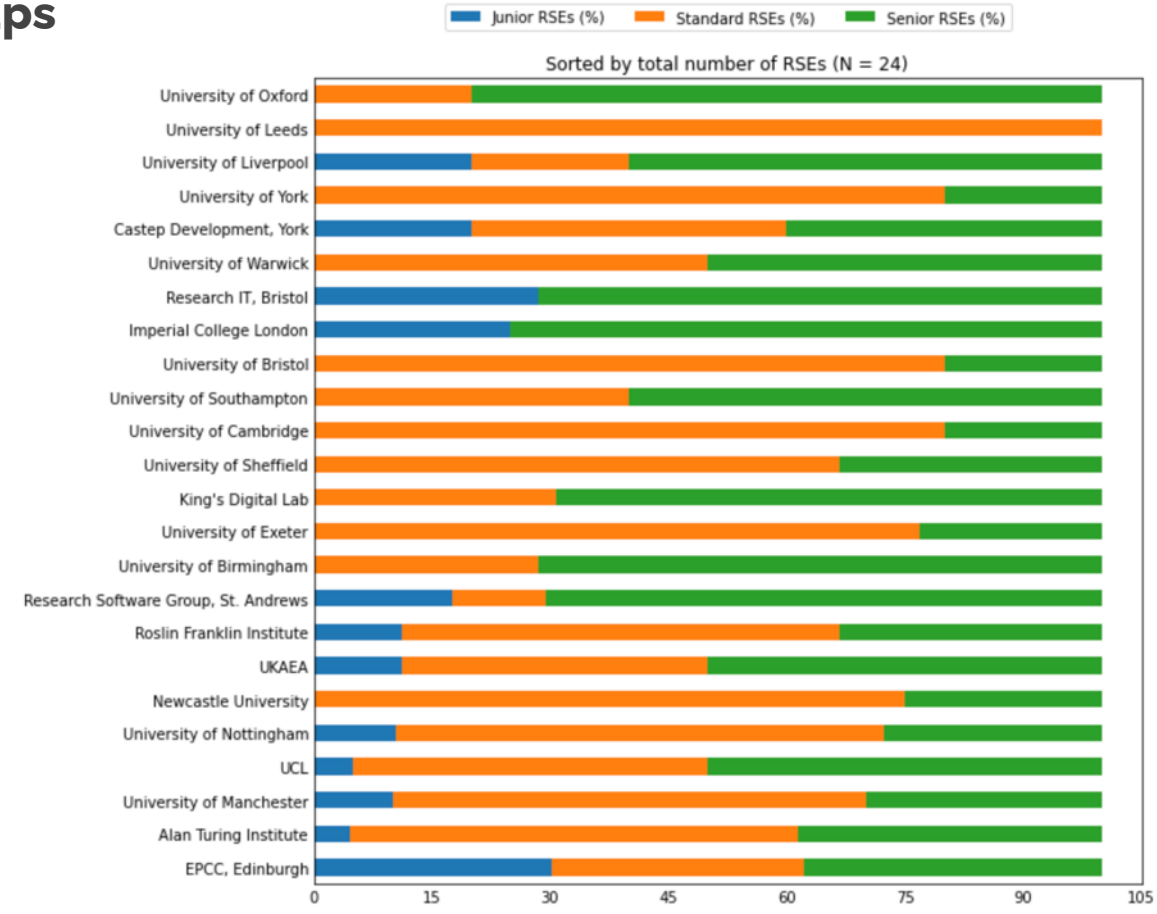
UK RSE Groups



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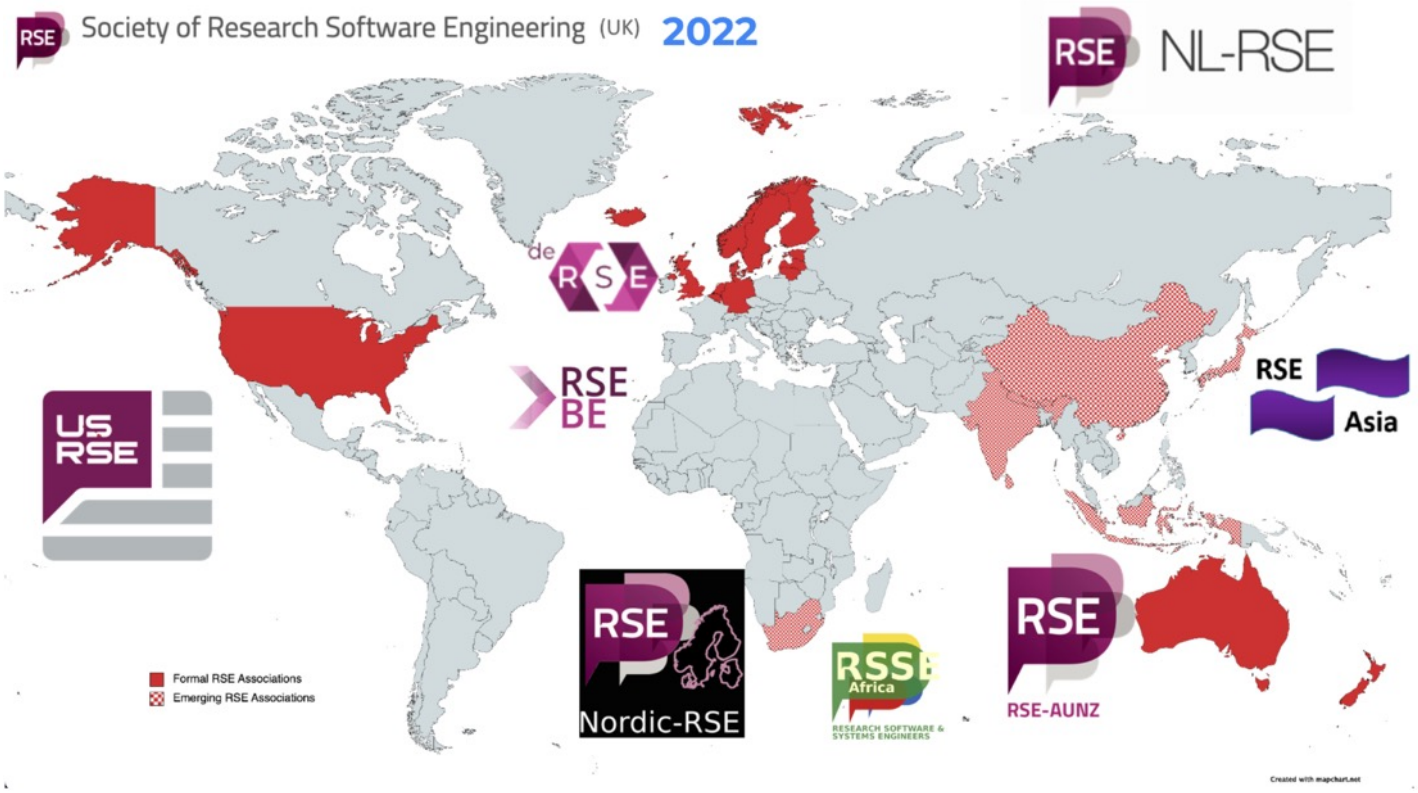
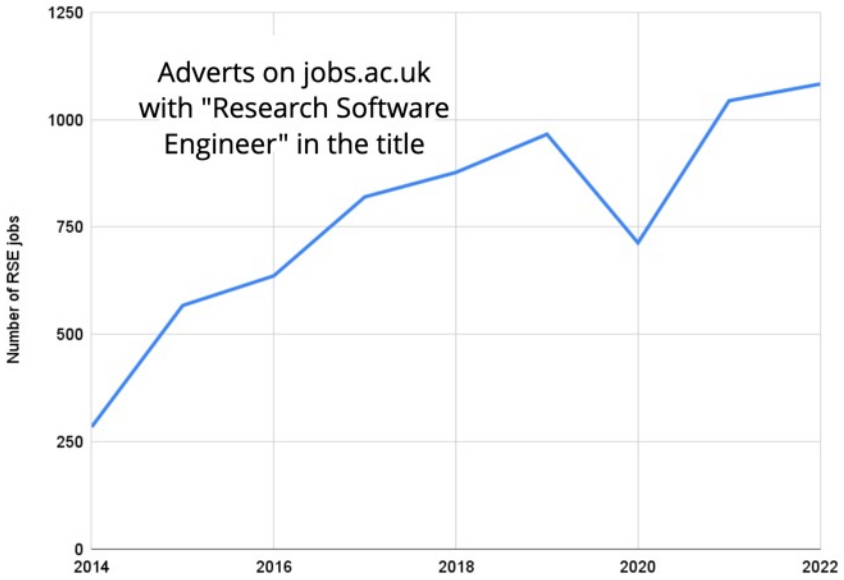
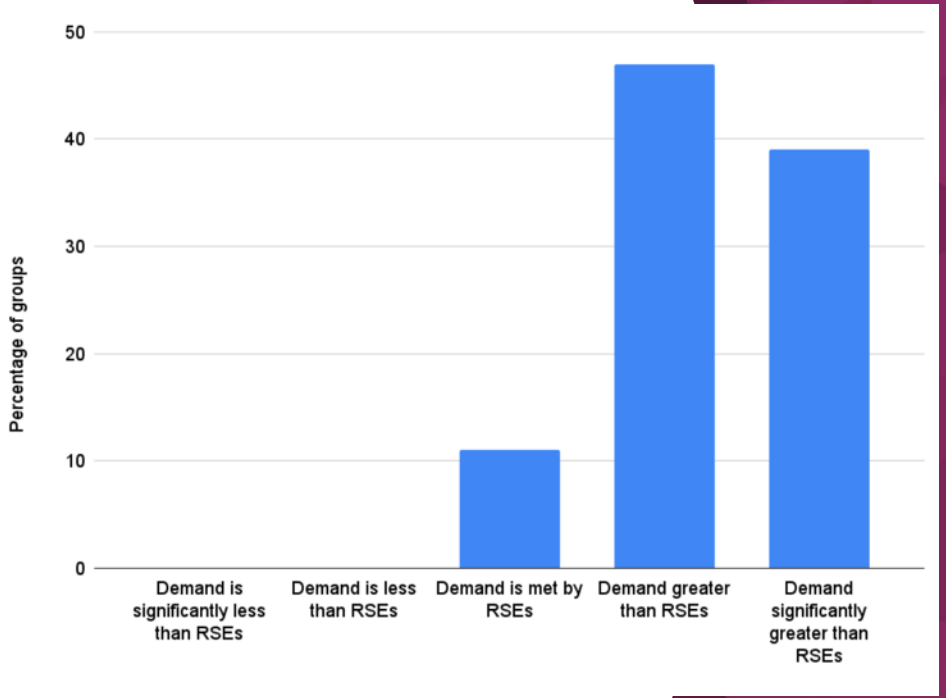
International RSE associations



~10,000 RSEs worldwide

Demand for RSEs





https://github.com/SimonHettrick/parsing_rse_job_adverts

https://github.com/softwaresaved/RSE-Group-Leaders-Survey-2023_Python

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Society of Research Software Engineering

2019

SeptembRSE
An online celebration of Research Software Engineering in 2021

slack

Code for thought
RSE

RSE CON24
Research Software Engineering Conference
Save the date!
03-05 Sept 2024
Newcastle, UK

Coach Mentoring

The RSE Landscape
What is your RSE type and how do you want to develop it?

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Society of Research Software Engineering

- Open to all
  - Who identify as research software engineers or related roles
    - E.g. data scientists, infrastructure engineers, HPC specialists etc.
  - Who are researchers, scientists who code
  - Who may have RSE as role title, or may not
  - Who work in academia or private sector etc

- Professional organisation for individual members
  - Registered Charity
  - 700+ members

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Government recognition

> *Research software engineers who port and maintain these codes and optimise system performance are a crucial part of operational infrastructure*

GOV.UK

Menu

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Department for Science, Innovation & Technology

Independent report

Independent Review of The Future of Compute: Final report and recommendations

Updated 6 March 2023

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Introduction from the expert panel
Report outline
List of recommendations
Proposed timeframe
Glossary of terms
1. The significance of compute for the UK
2. The international landscape of compute
3. The demand for compute in the UK
4. Meeting the UK's compute needs
5. Creating a vibrant compute ecosystem
6. Recommendations
Acknowledgements

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The Rt Hon Jeremy Hunt MP
Chancellor of the Exchequer

The Rt Hon Michelle Donelan MP
Secretary of State for Science, Innovation and Technology

https://www.gov.uk/government/publications/future-of-compute-review/the-future-of-compute-report-of-the-review-of-independent-panel-of-experts

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Government recognition

> *Universities should embrace Research Software Engineering as an intellectually and academically creative collaborative discipline, especially in health, with realistic salaries and recognition*

https://assets.publishing.service.gov.uk/media/624ea0ade90e072a014d508a/goldacre-review-using-health-data-for-research-and-analysis.pdf

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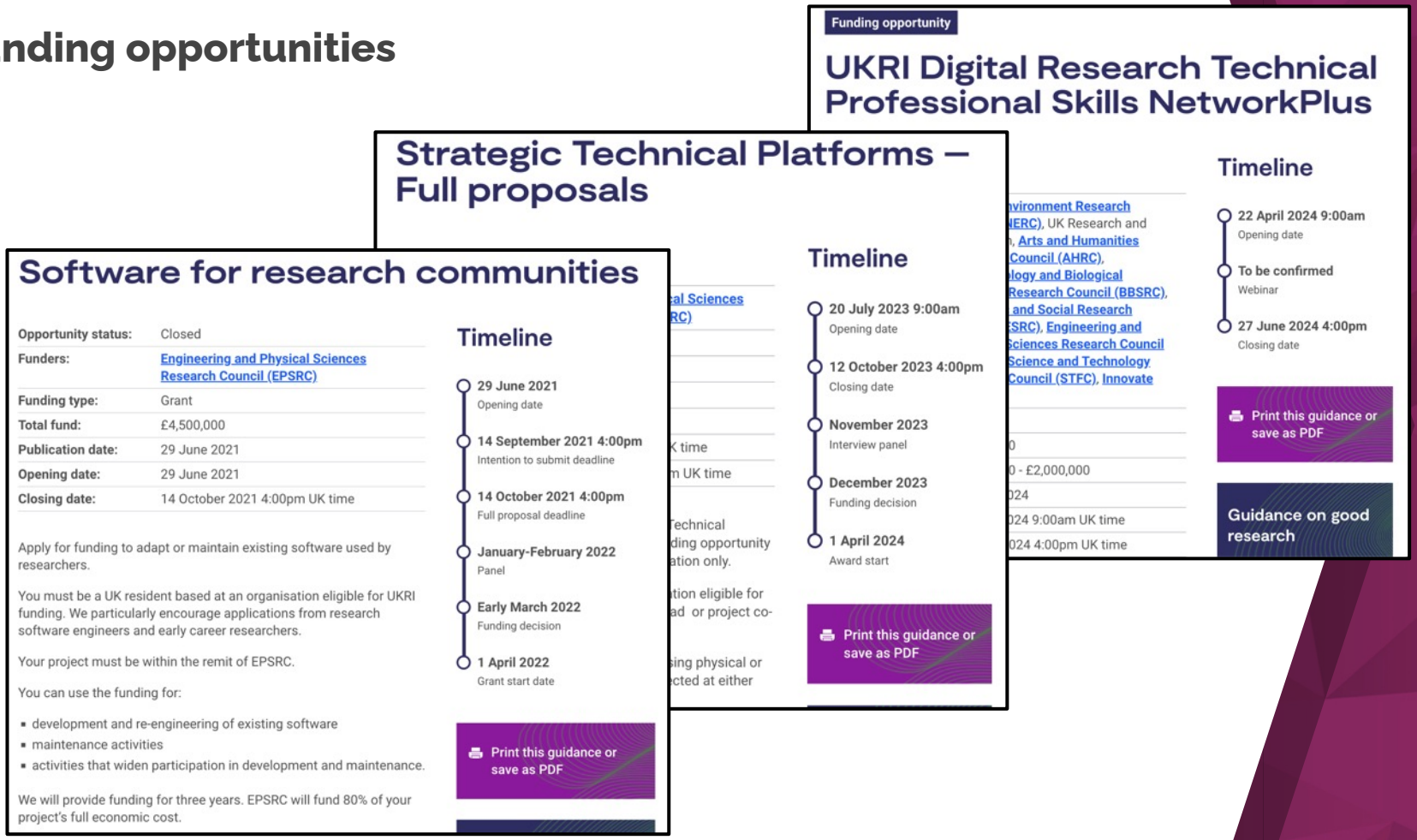
Funding opportunities



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Remaining challenges

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Academic recognition

*If we don't **recognise** the work that is vital to research,*
we limit our ability to conduct research

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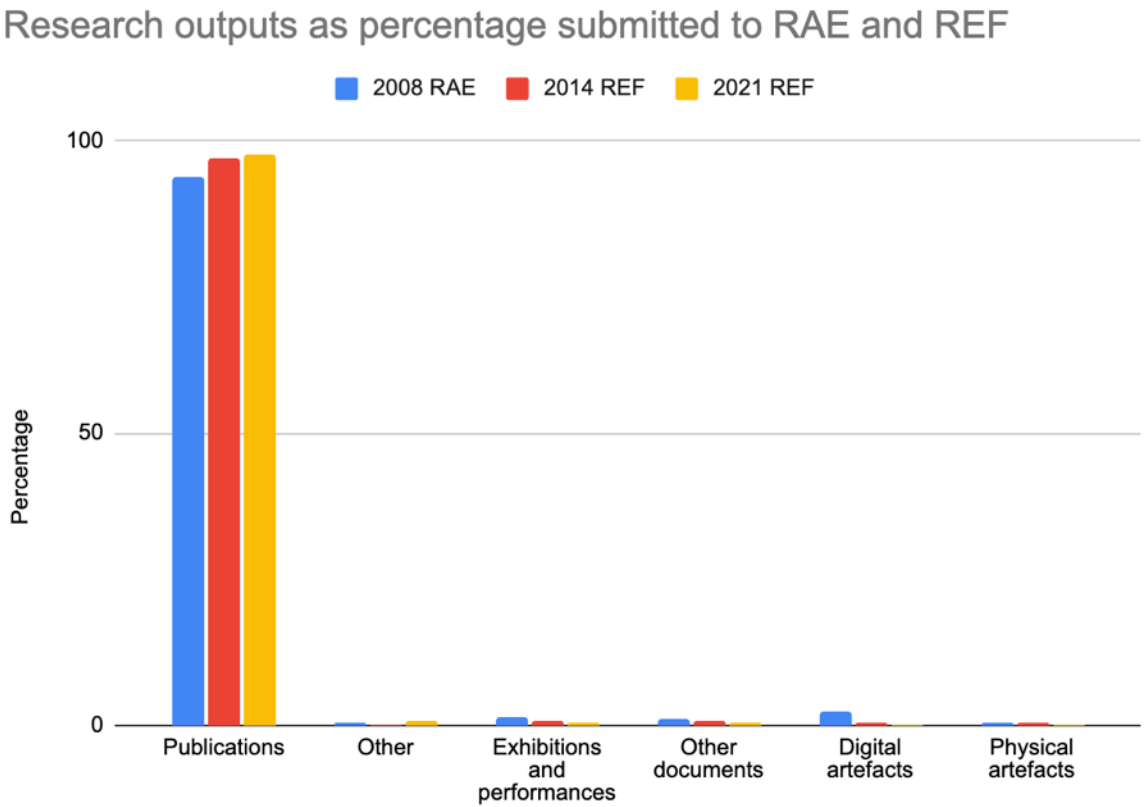
Academic recognition



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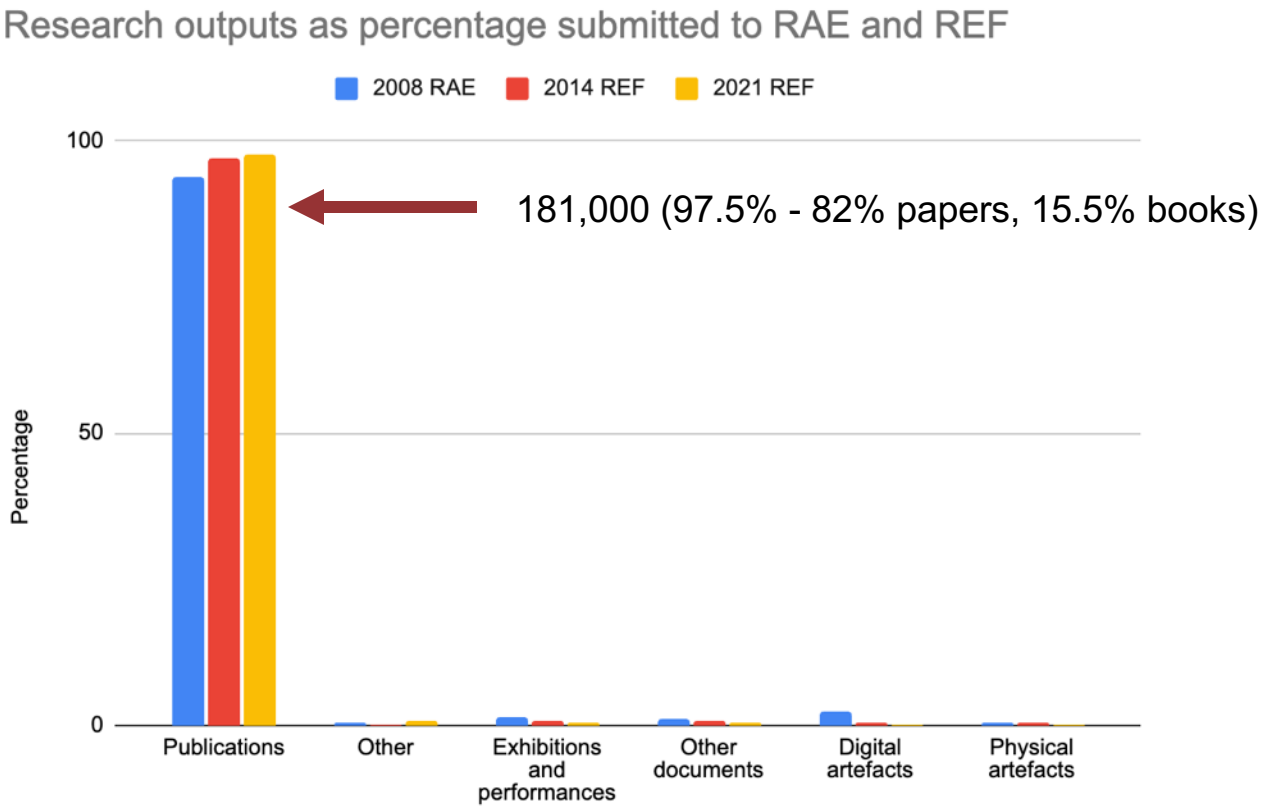
Academic recognition



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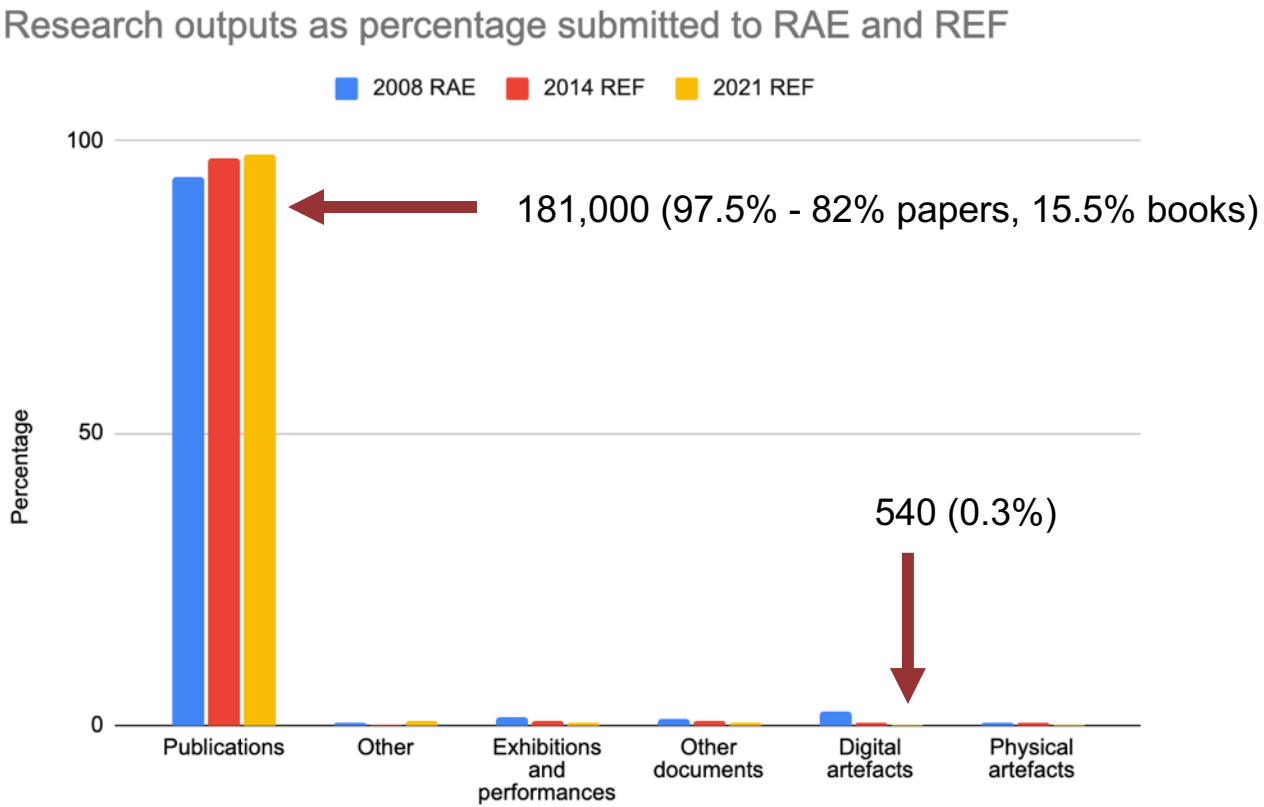
Academic recognition



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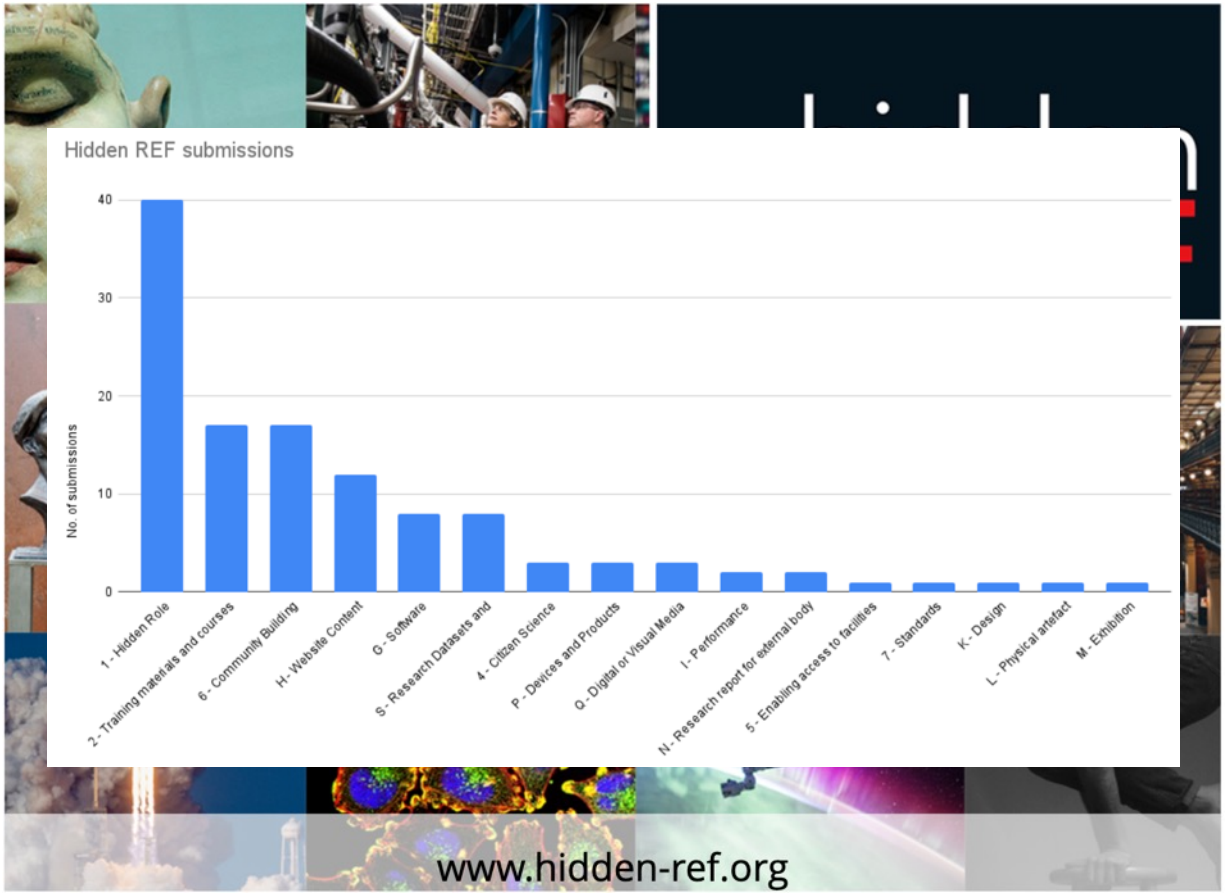

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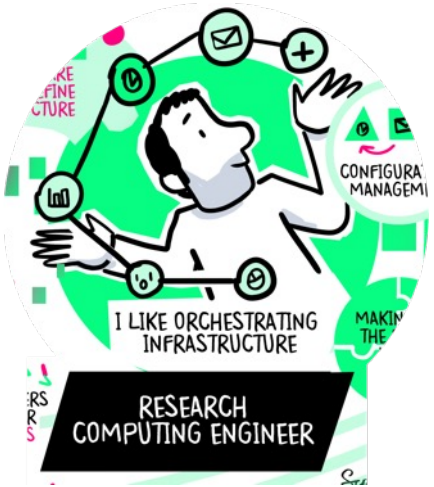
Role diversity



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Role diversity

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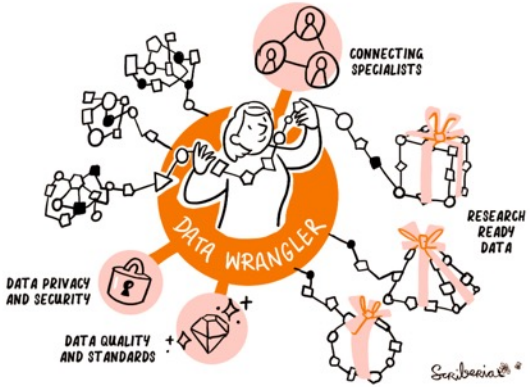
Role diversity



Data wranglers

Research Community Managers

Research Application Managers

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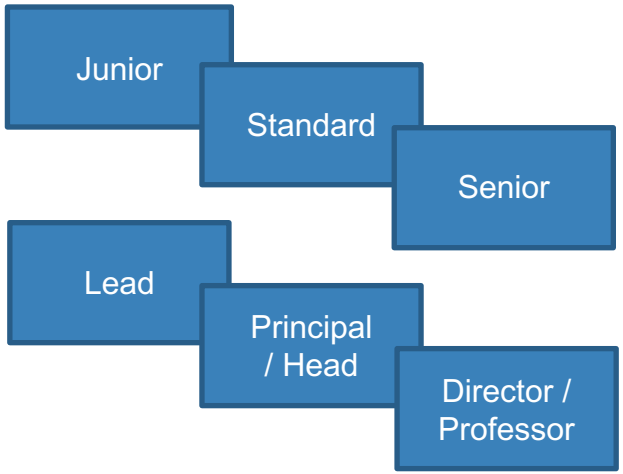
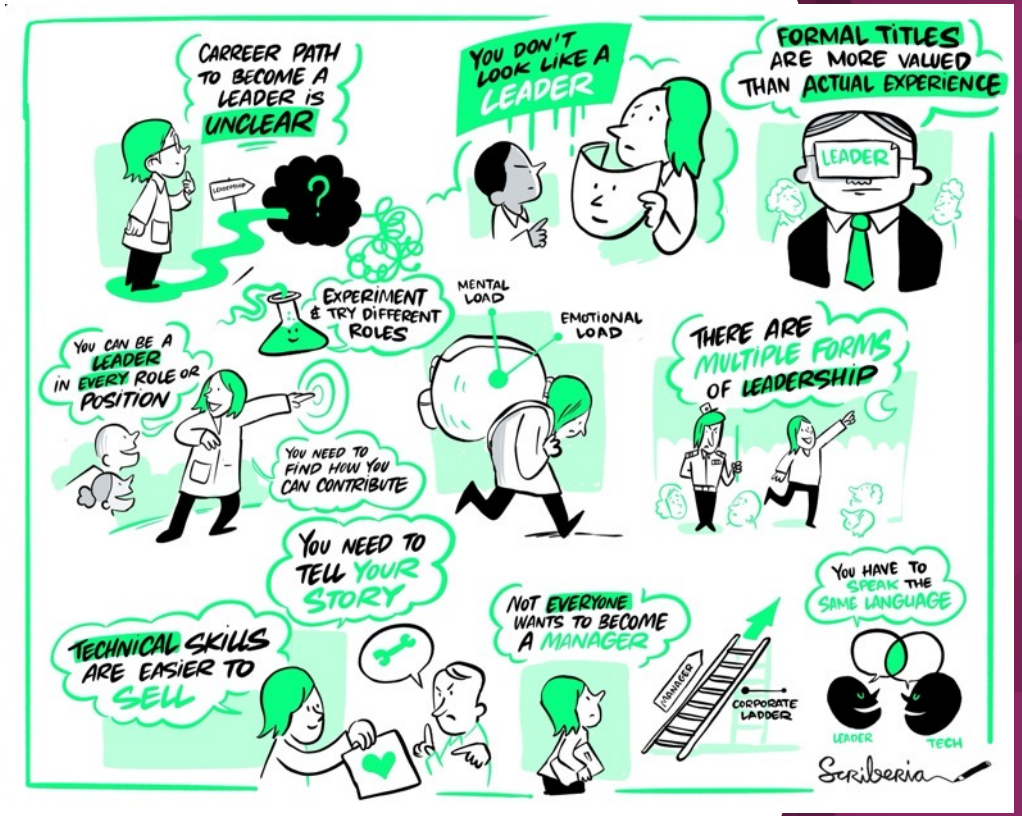
Career pathways

- Wider range of seniority levels
- Promotion pathways
- Competency framework
- Entry pathways to profession
- Pathways for embedded RSEs





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society-rse.org

Society of RSE Trustee Report
bit.ly/socrse-report-2023

RSE State of the Nation Report
doi.org/10.5281/zenodo.495360

A not-so-brief history of Research Software Engineers
bit.ly/NotSoBriefRSE

HiddenREF
hidden-ref.org

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