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# RSEs and Software Sustainability

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Slides: <https://indico.cern.ch/event/1351992/>

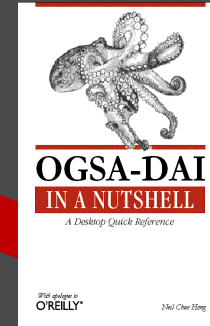
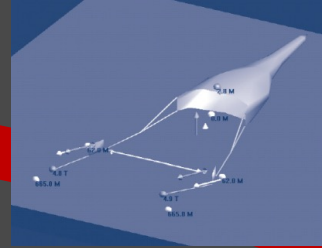
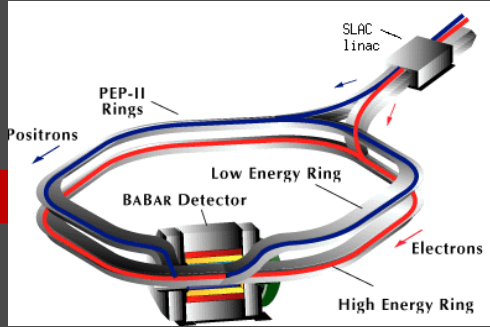
ExaTEPP Workshop, Edinburgh  
24 January 2024



FUNDERS



# My career, so far...



Director, Software Sustainability Institute  
Professor of Research Software Policy and Practice,  
University of Edinburgh  
Chair, ExCALIBUR Steering Committee  
Member, UKRI Advisory Group on Digital Research Infrastructure  
PI, Understanding and Nurturing an Integrated Vision for Education  
in RSE and HPC (UNIVERSE-HPC)

**BETTER  
SOFTWARE  
BETTER  
RESEARCH**

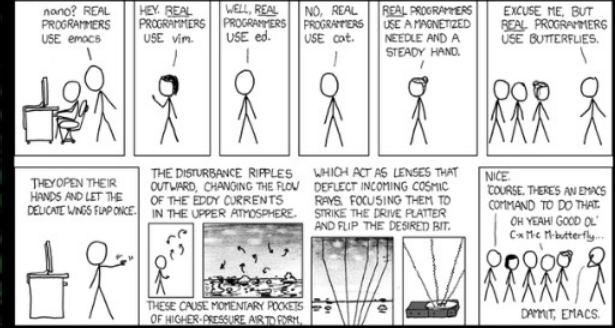
# RESEARCH SOFTWARE ENGINEER



WHAT MY FRIENDS THINK I DO



WHAT MY FAMILY THINK I DO



WHAT SOCIETY THINKS I DO



WHAT MY COLLABORATORS THINK I DO

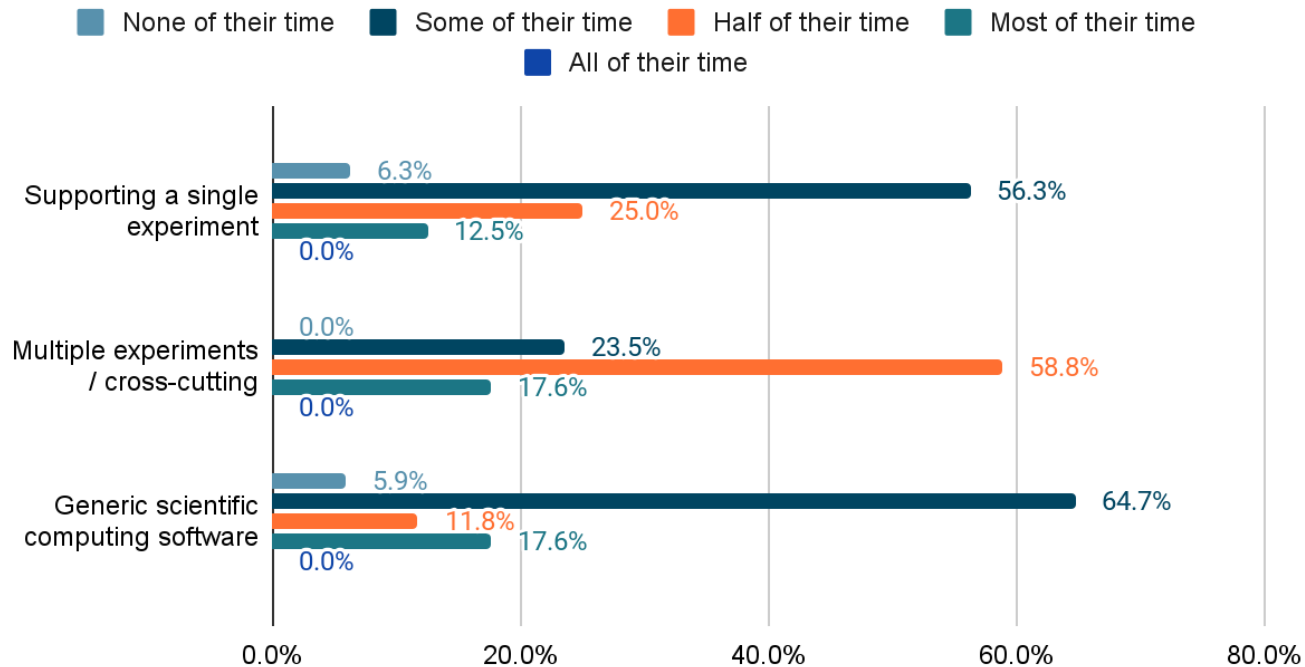


WHAT I THINK I DO



WHAT I REALLY DO

## How should RTPs time be spread?



PP RTP's (including RSEs) should spend about half their time supporting multiple experiments / cross-cutting work, with the other half split between supporting a particular experiment or working on generic scientific software.

Dedicated time preferred.

## Challenges facing RSEs in PP

Strong consensus that what is required is more RSEs, but:

- Other domains, industry also needing RSEs
- Potential gaps in specialist skills because of lack of education and training
- Career paths improving but recognition can still be lacking

Who will pay for the RSE effort required, which is so often “hidden”?



# Sustainability

You keep using  
that word.



# Tariffs, Taxes and Transfers



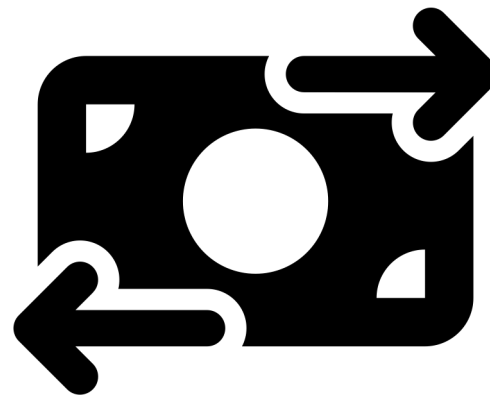
## Tariffs

fees paid  
by users of the  
service



## Taxes

subsidies from  
local / national  
tax payers



## Transfers

contributions from  
foreign donors

# Tariffs, Taxes and Transfers



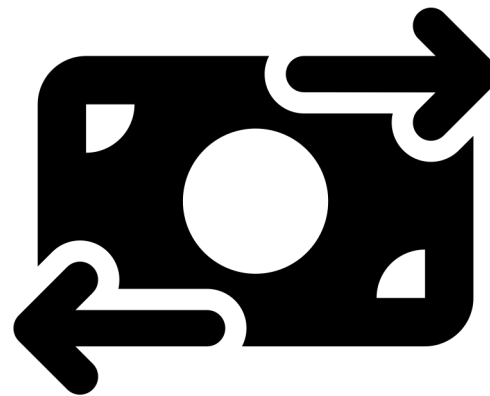
## Tariffs

contributions  
from users?



## Taxes

investment from  
national research  
funders



## Transfers

international  
collaboration



## Software sustainability in PP

Software typically outlives the computational hardware that it run on

- Hardware roadmaps are a different story
- Larger team sizes compared to other domains, but still relatively low bus factors
- Opportunity for integration with scientific computing ecosystems to improve sustainability

Software sustainability does not just mean continued funding – it also requires knowledge transfer and reduction of technical debt

# RSEs and software sustainability

RSEs and software sustainability are intrinsically linked

- Developing and maintaining software (obviously)
- Ensuring that skills and training needs are addressed
- Improving recognition to enable input into decision making

Ultimately, this enables / supports many other things:

- Research at larger scales / complexity
- Reducing environmental impact
- Broader impact of research

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**Questions?**