Recognising software expertise is key to research

By Simon Hettrick

Software Sustainability Institute

University of Edinburgh, University of Oxford, University of Southampton, University of Manchester 1824

UKRI: Arts and Humanities Research Council; Economic and Social Research Council; Medical Research Council; Science and Technology Facilities Council; Biotechnology and Biological Sciences Research Council; Engineering and Physical Sciences Research Council; Natural Environment Research Council

13 May 2020 - Virtual CERSE Meeting @sjh5000 ORCID: 0000-0002-6809-5195

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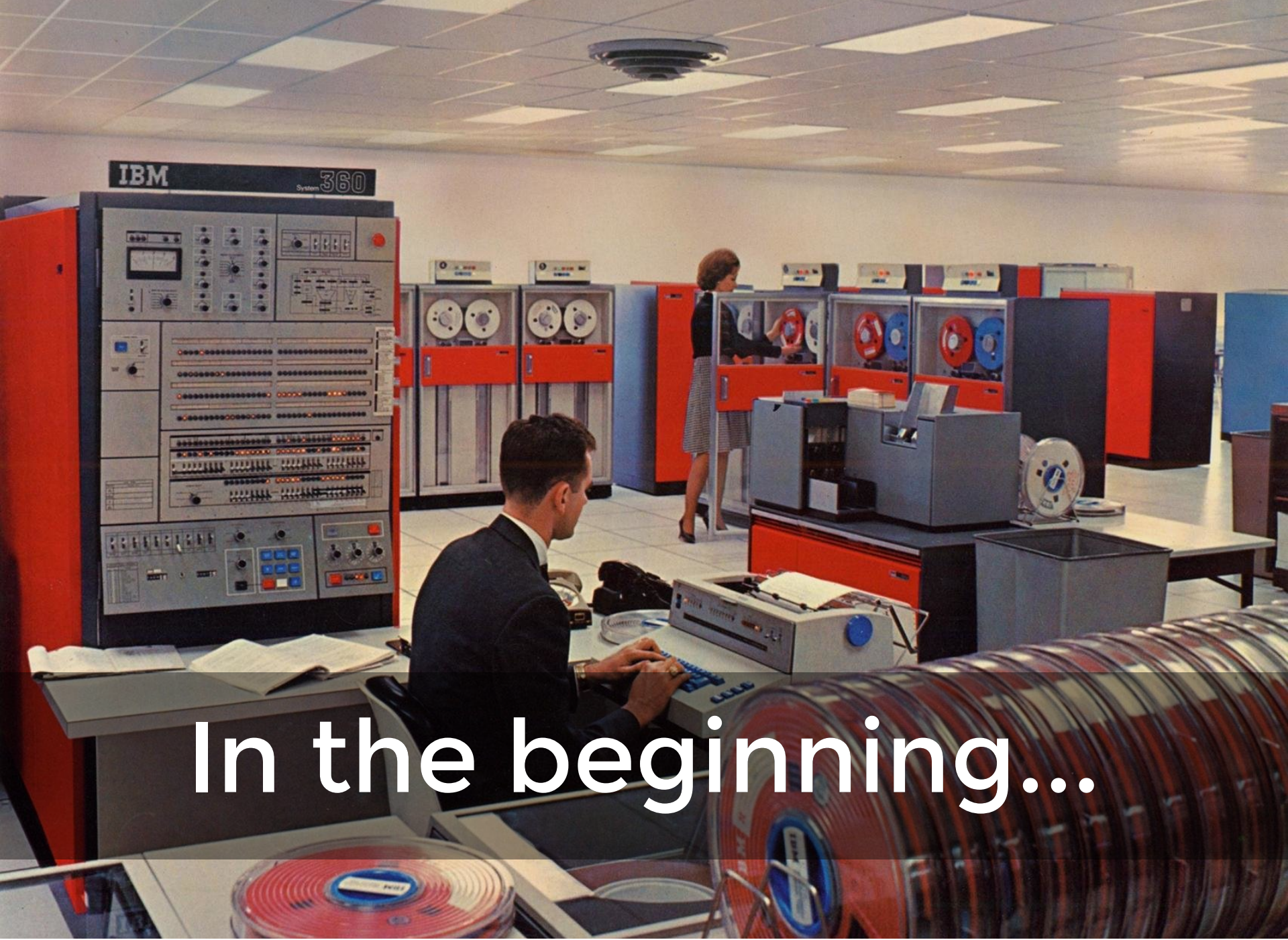
P. DEBYE M. KNUDSEN W.L. BRAGG H.A. KRAMERS P.A.M. DIRAC A.H. COMPTON L. de BROGLIE M. BORN N. BOHR

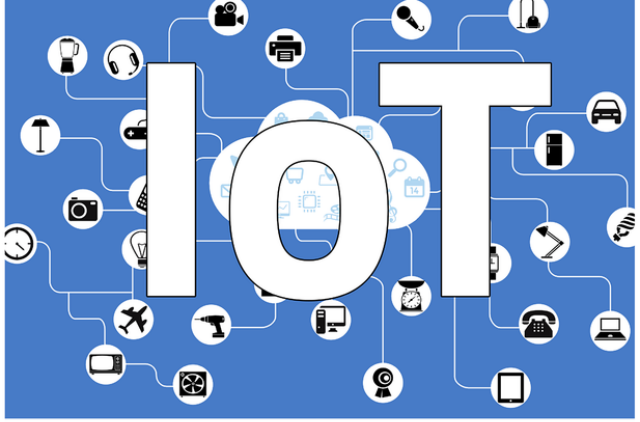
I. LANGMUIR M, PLANCK Mme CURIE H.A.LORENTZ A. EINSTEIN P. LANGEVIN Ch.E. GUYE C.T.R. WILSON O W, RICHAR

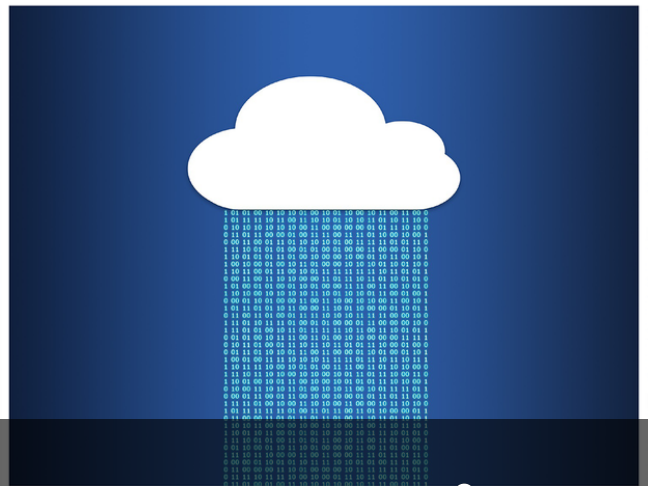
Absents : Sir W.H. BRAGG, H. DESLANDRES et E. VAN AUBEL



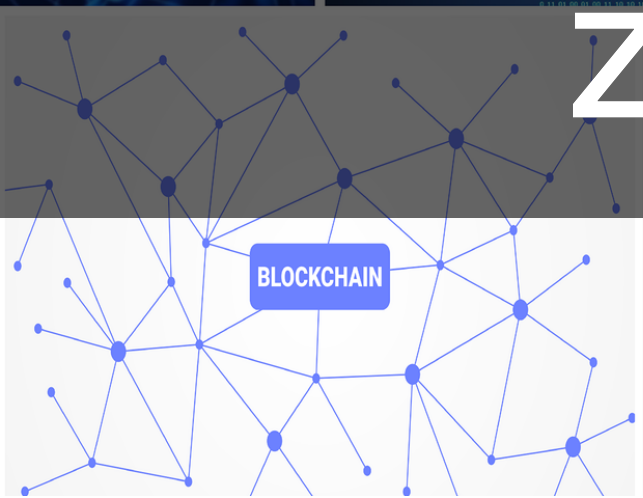
In the beginning...

Vive la révolution!





Zeitgeists!



MACHINE LEARNING

It's not just the zeitgeists...

These slides: https://bit.ly/2Ajc0IJ

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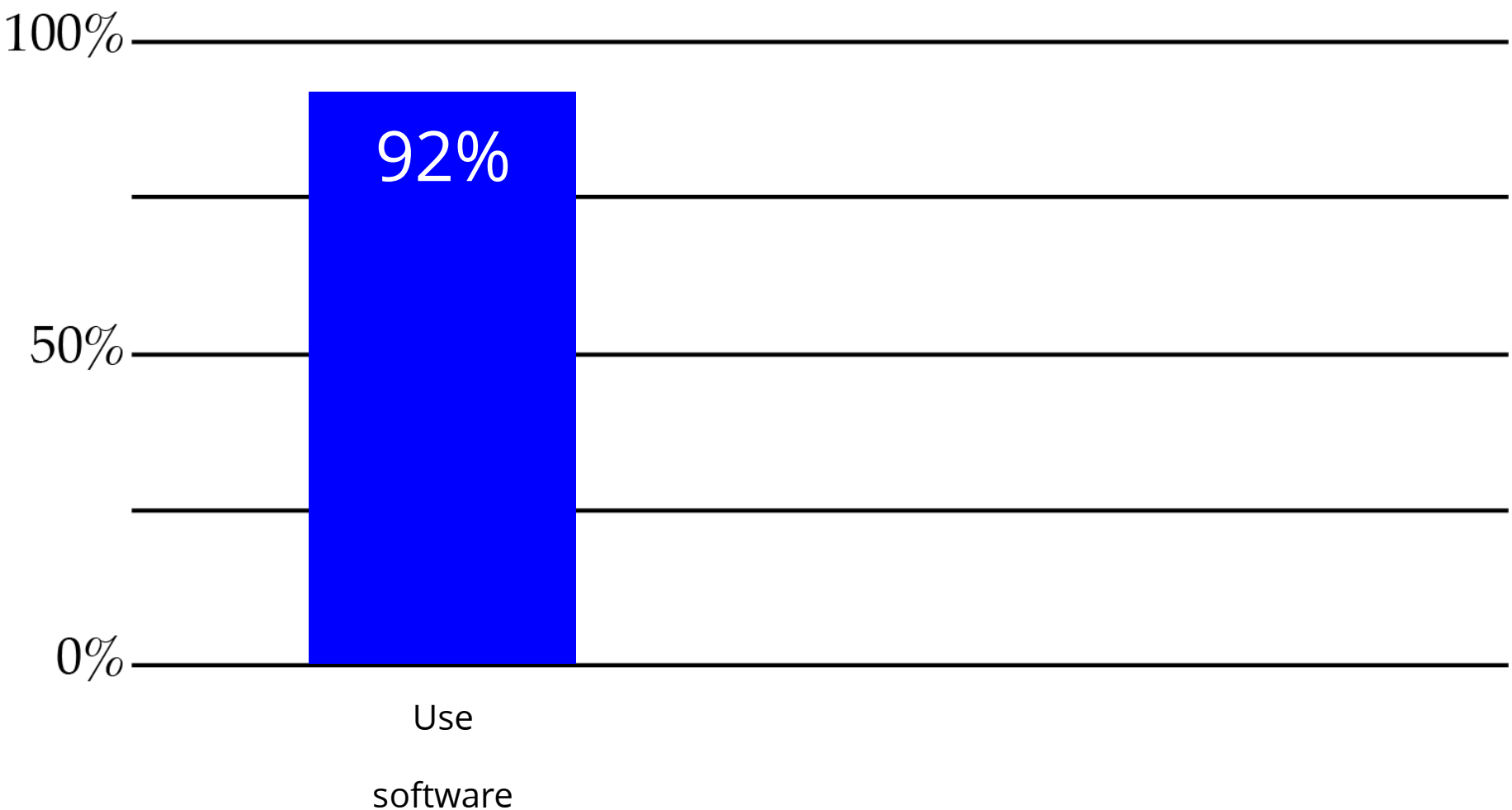
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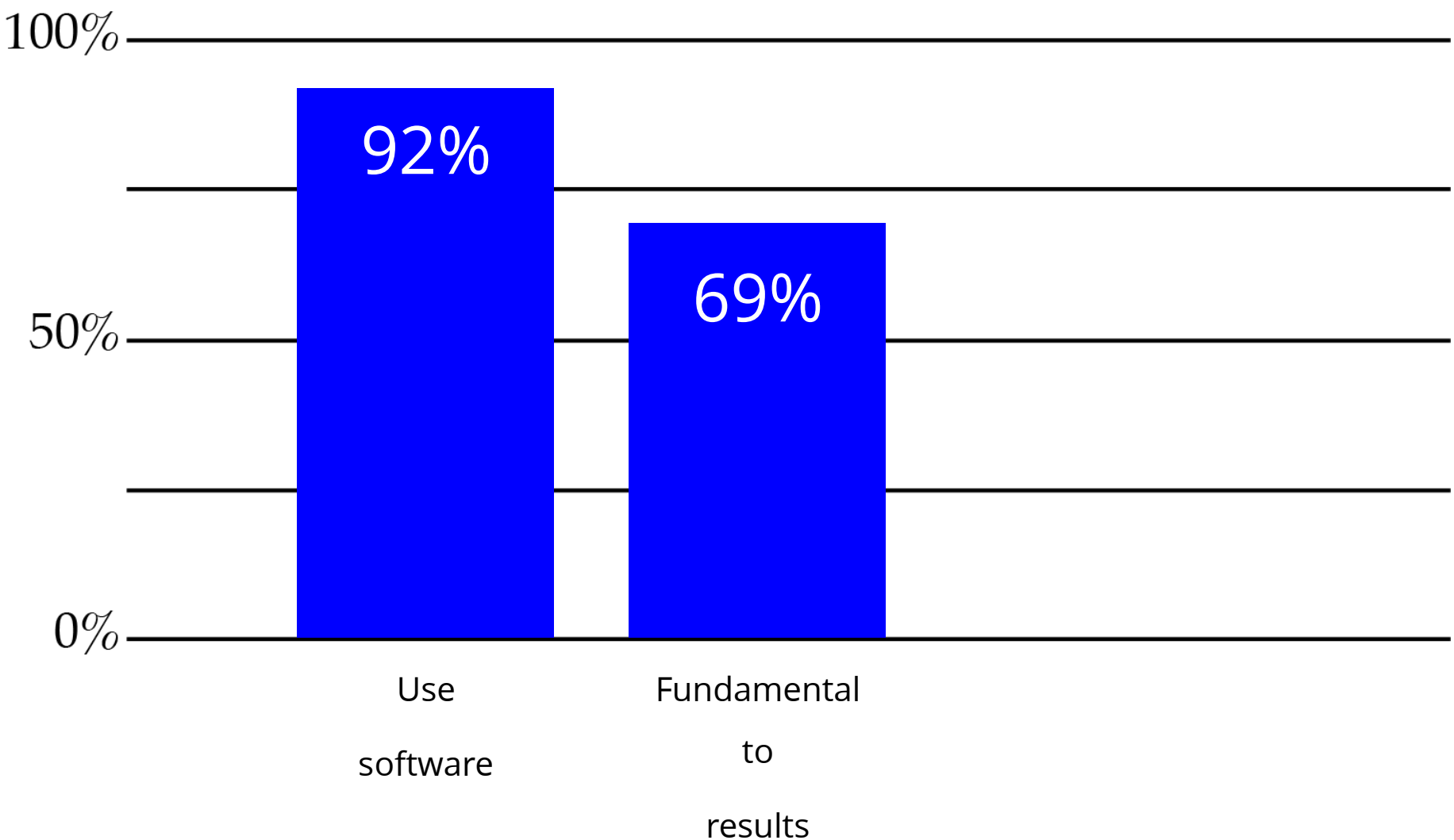
Use
software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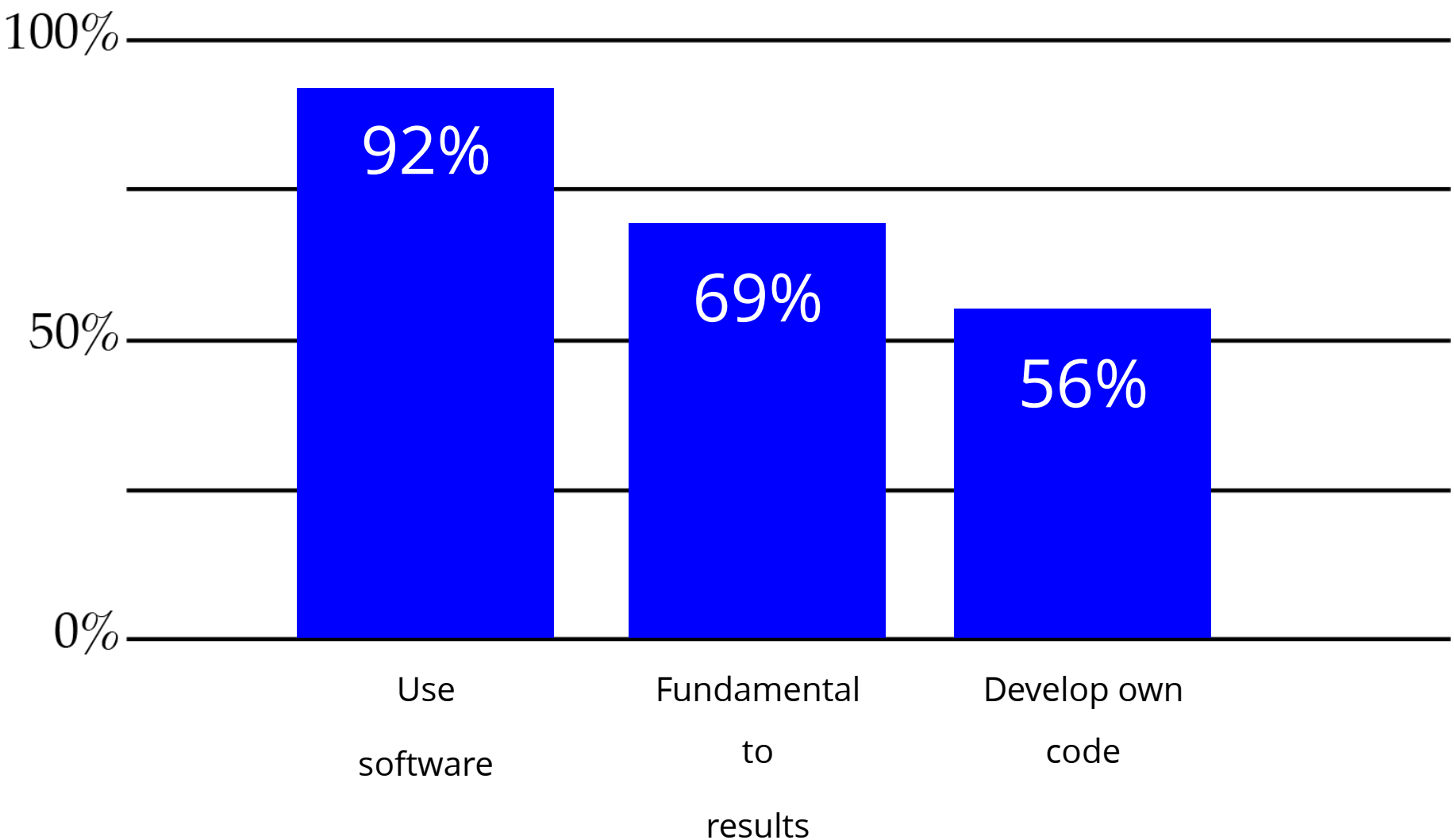
Use software
Fundamental to results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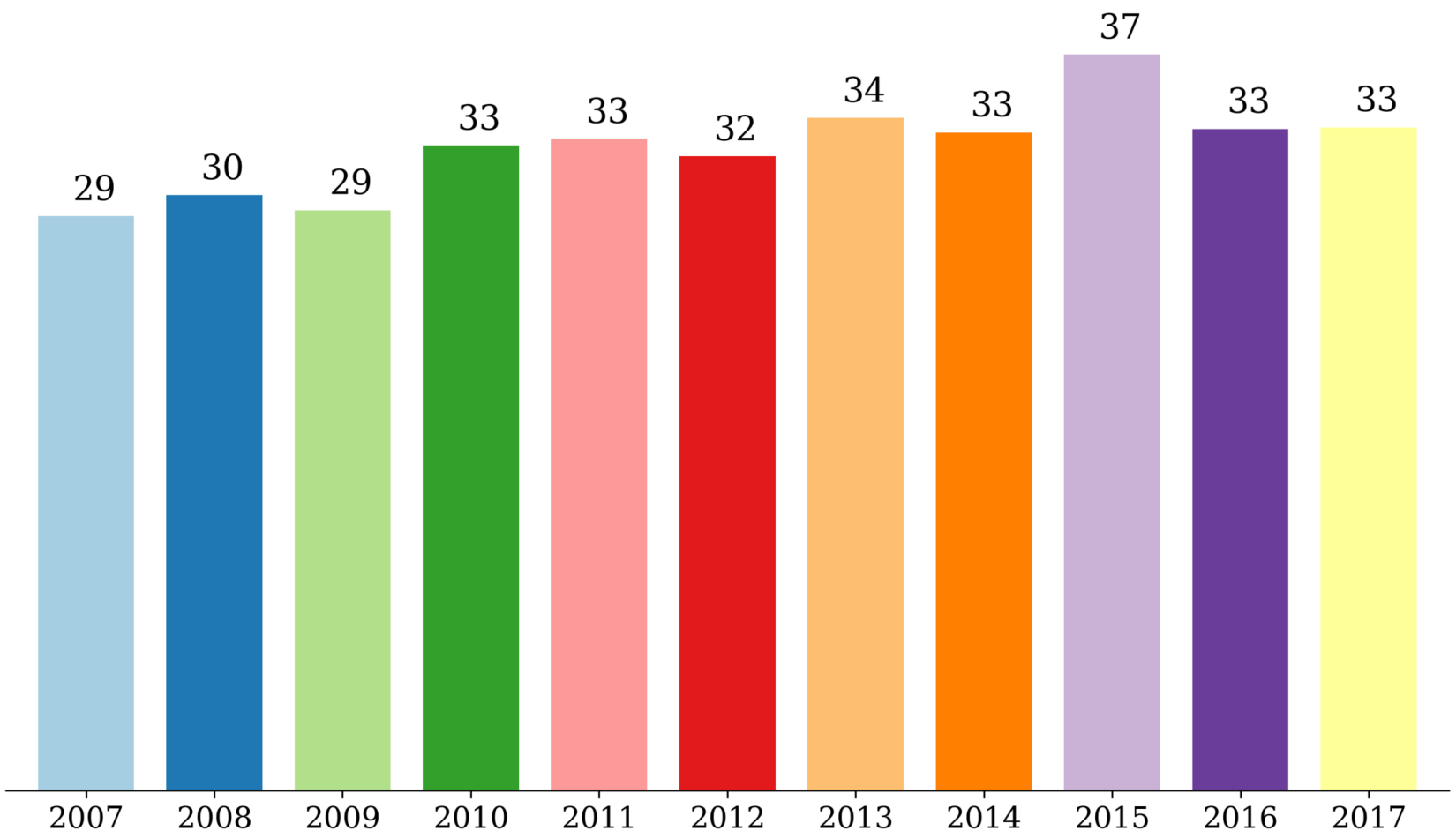
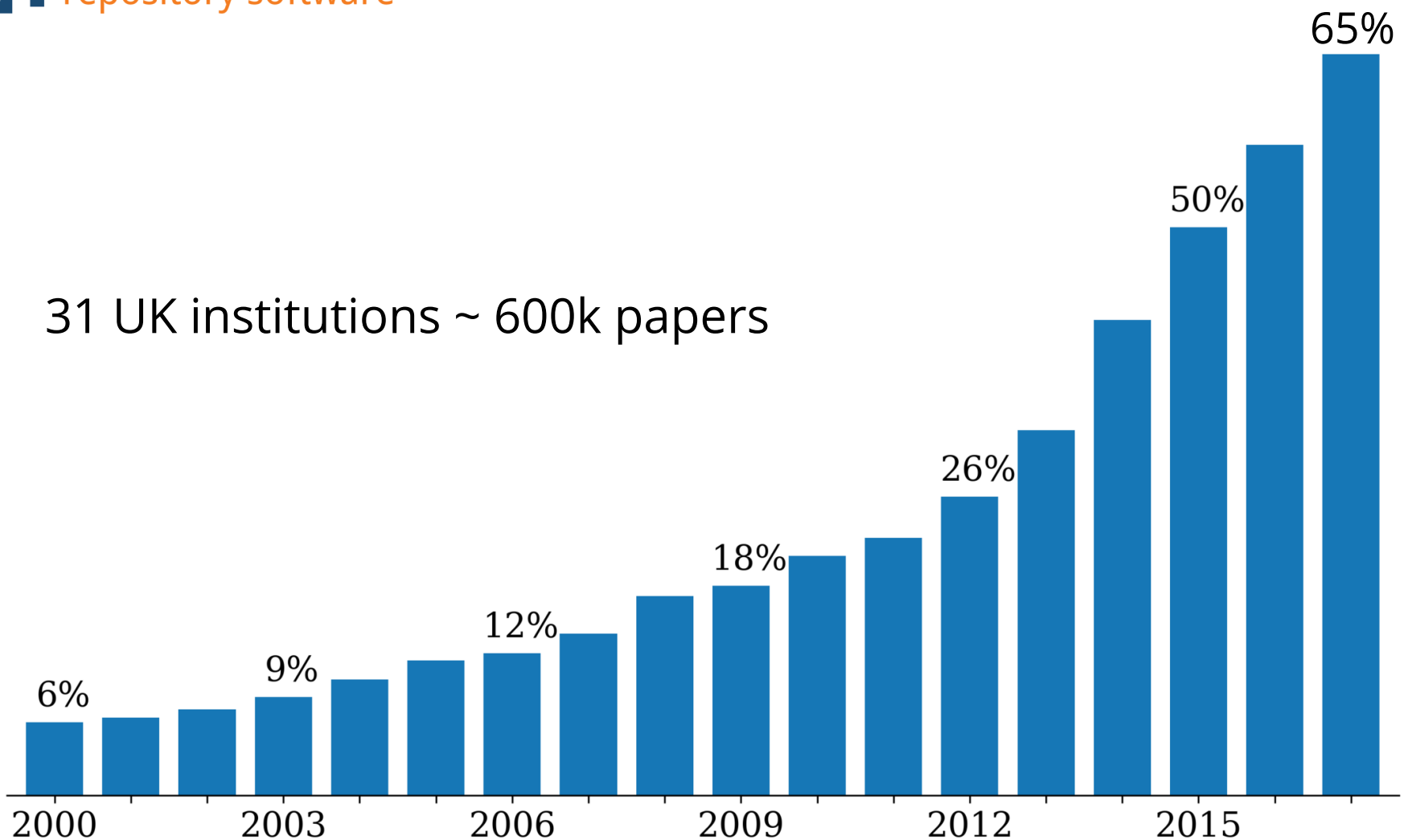
Use software
Fundamental to results
Develop own code

Percentage of cross-council funding in software-reliant research



eprints
repository software

31 UK institutions ~ 600k papers



Software is vital to research

Who writes the software?

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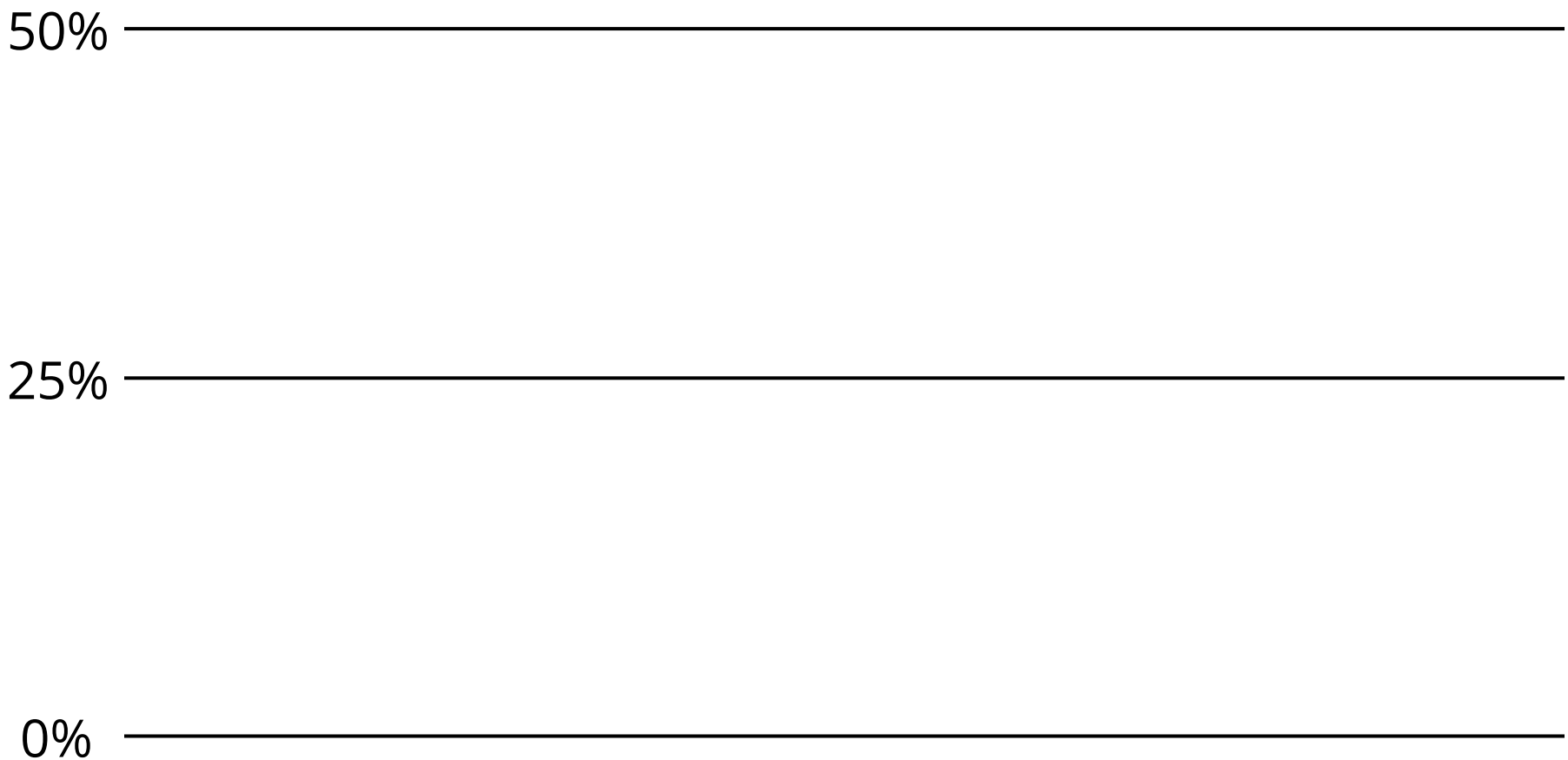
It wasn't software engineers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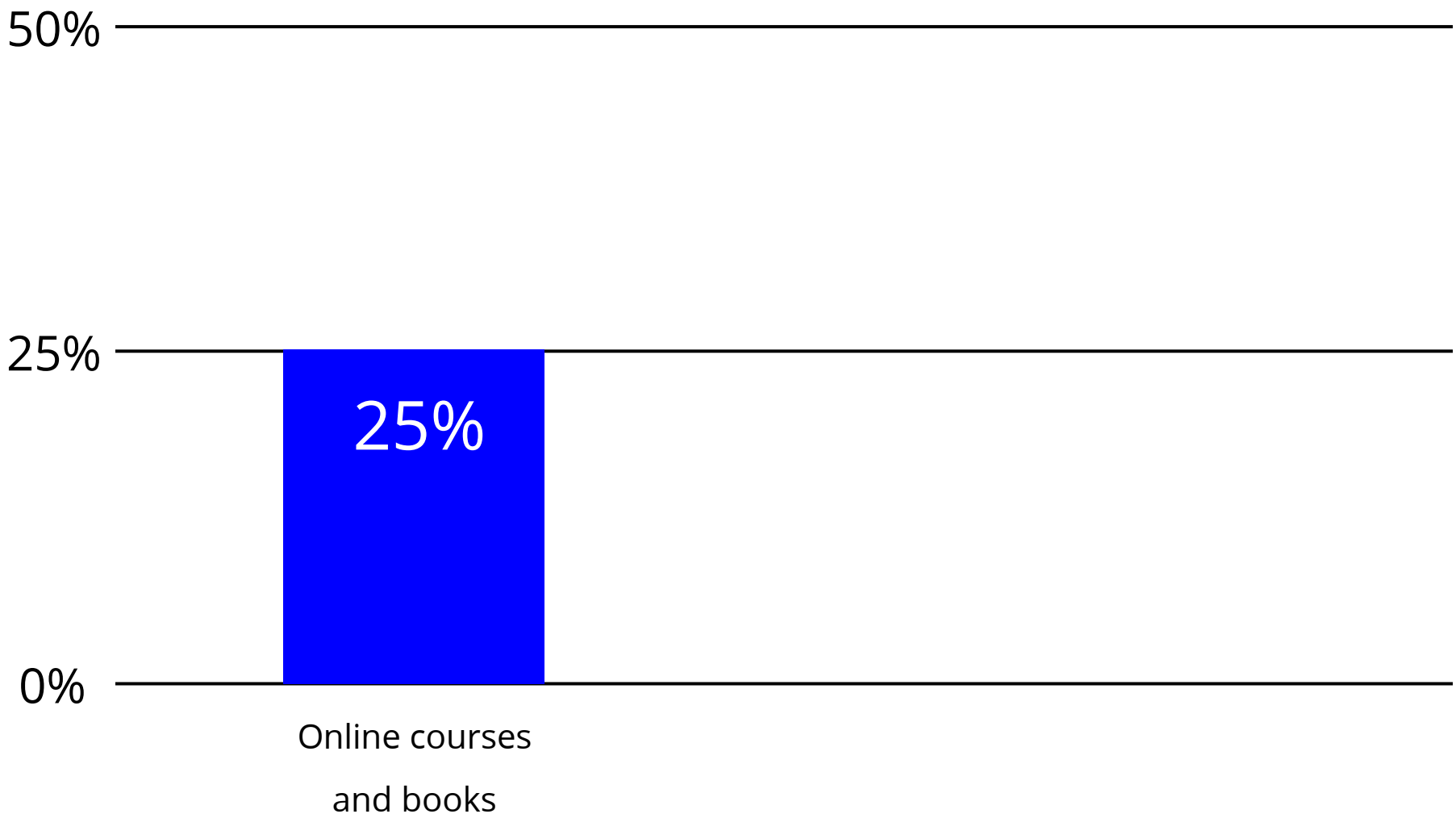
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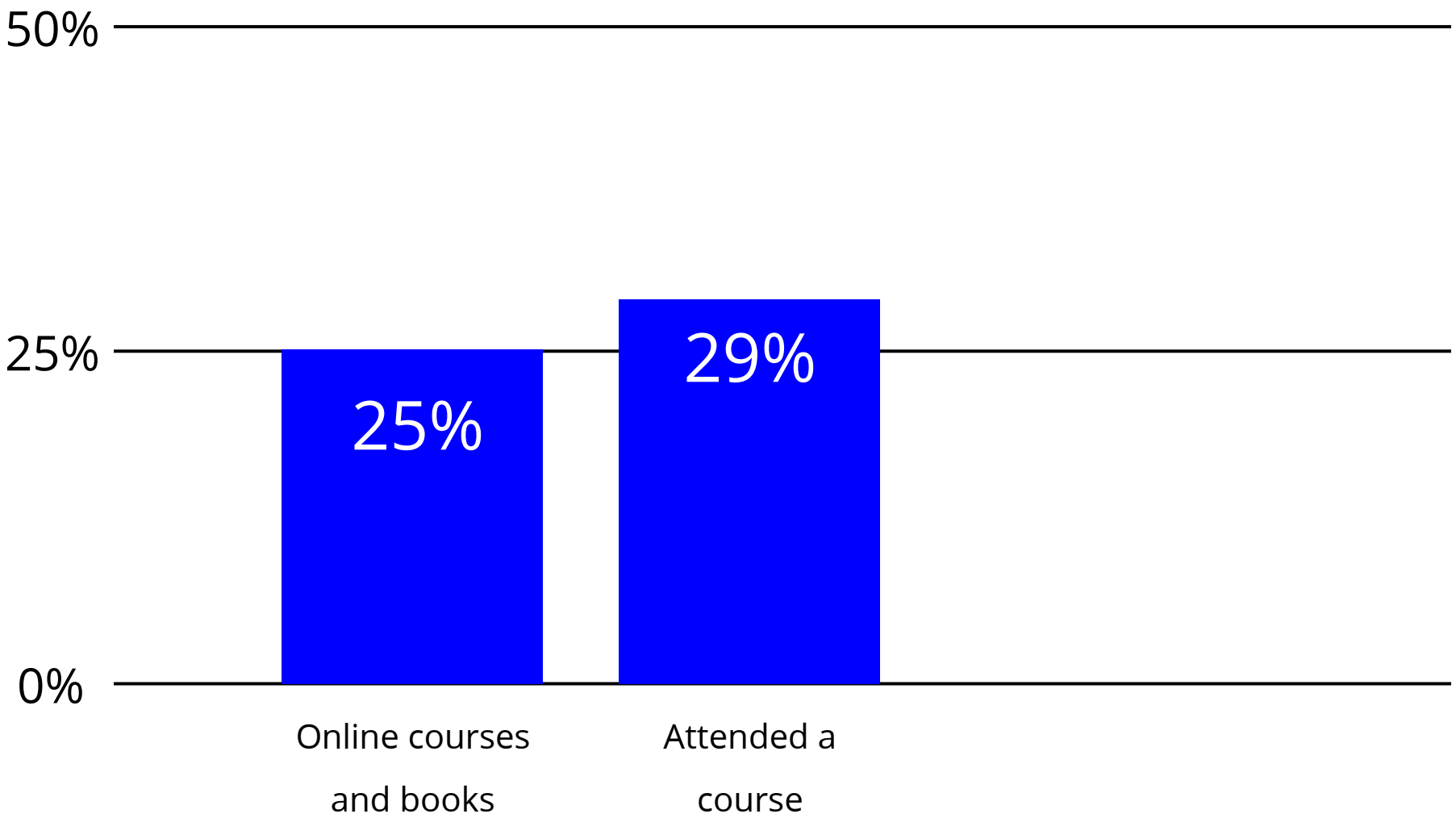
Online courses
and books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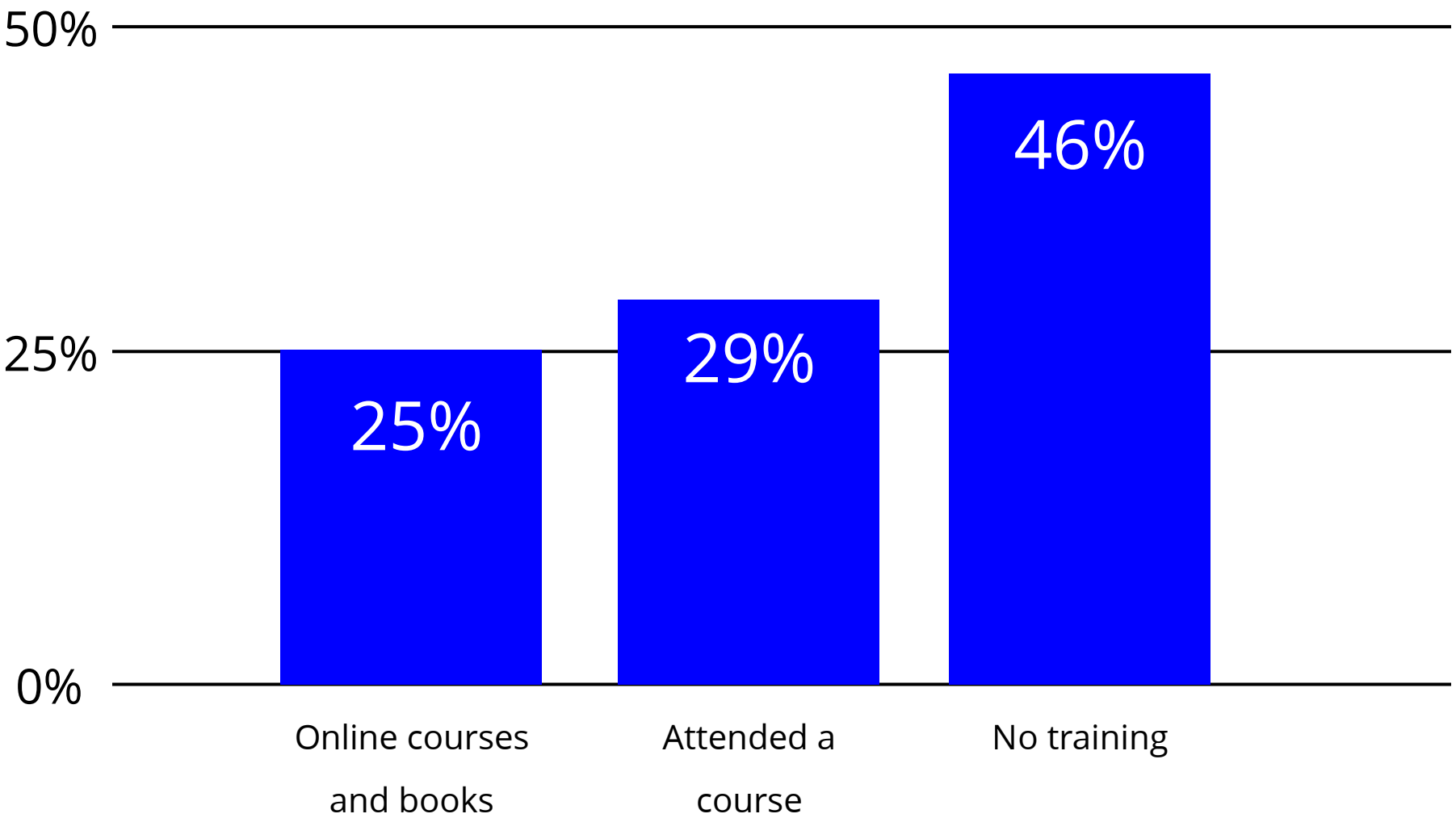
Online courses and books
Attended a course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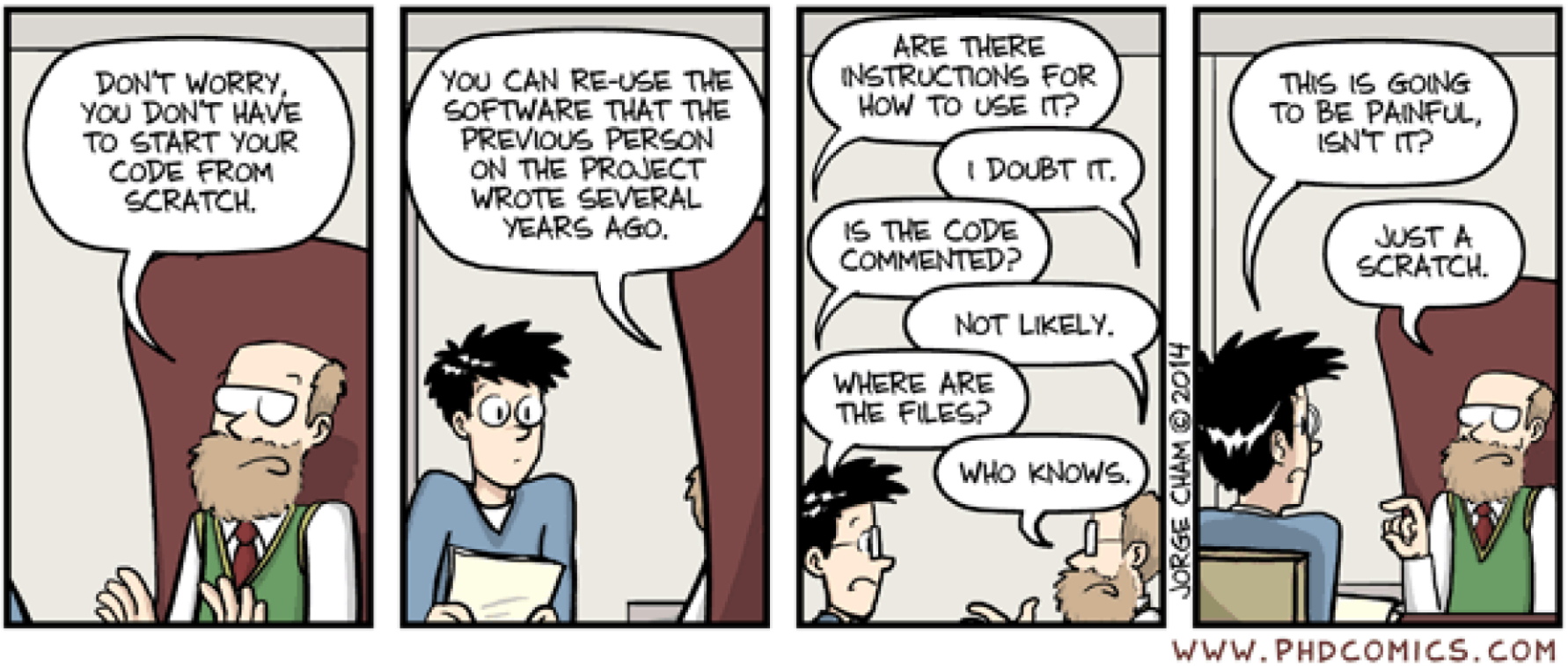
Online courses and books
Attended a course
No training

Piled Higher and Deeper ***by Jorge Cham*** **www.phdcomics.com**



title: "Scratch" - originally published 3/12/2014

The Venn of academic importance

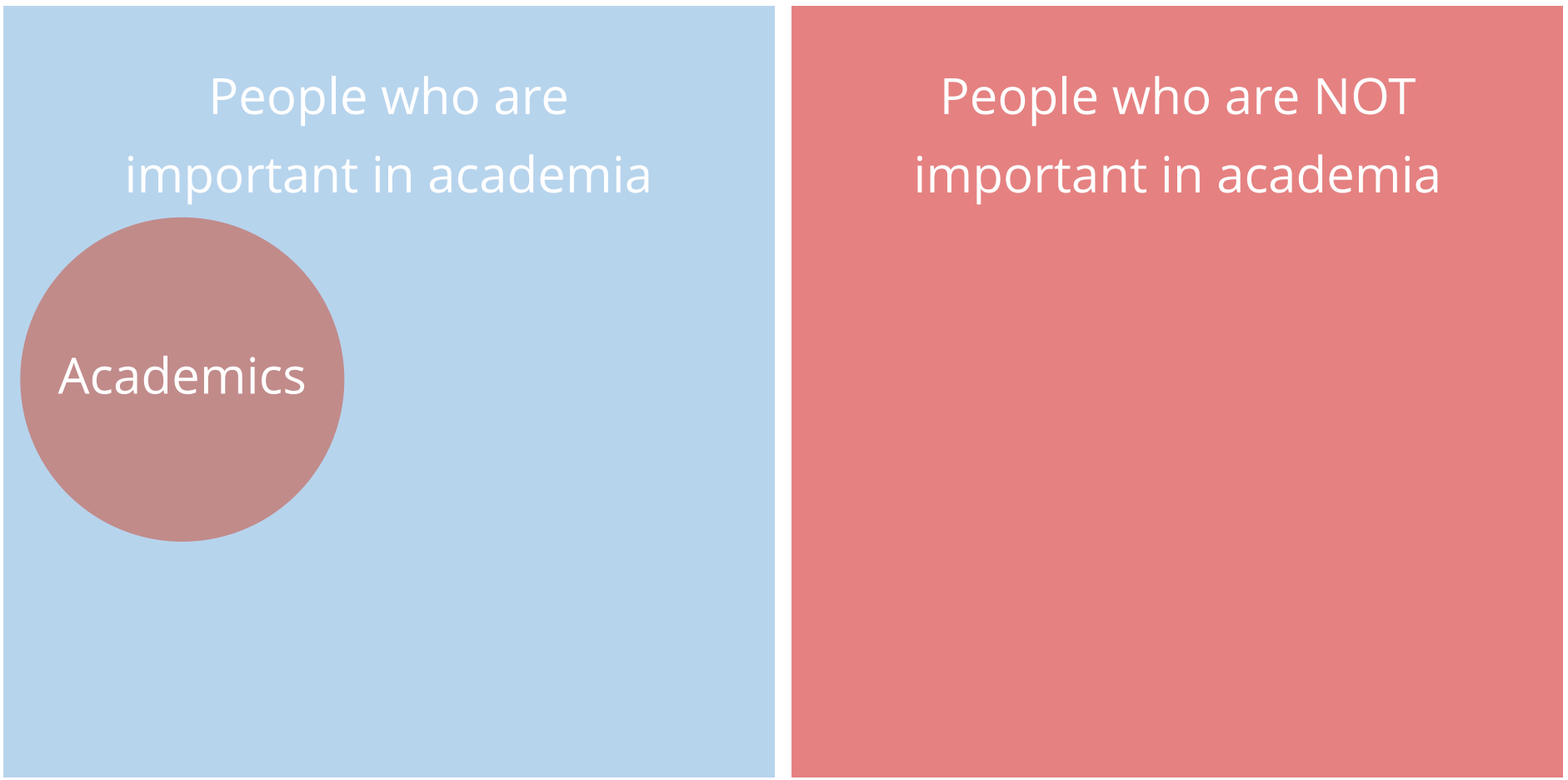
The Venn of academic importance

The Venn of academic importance

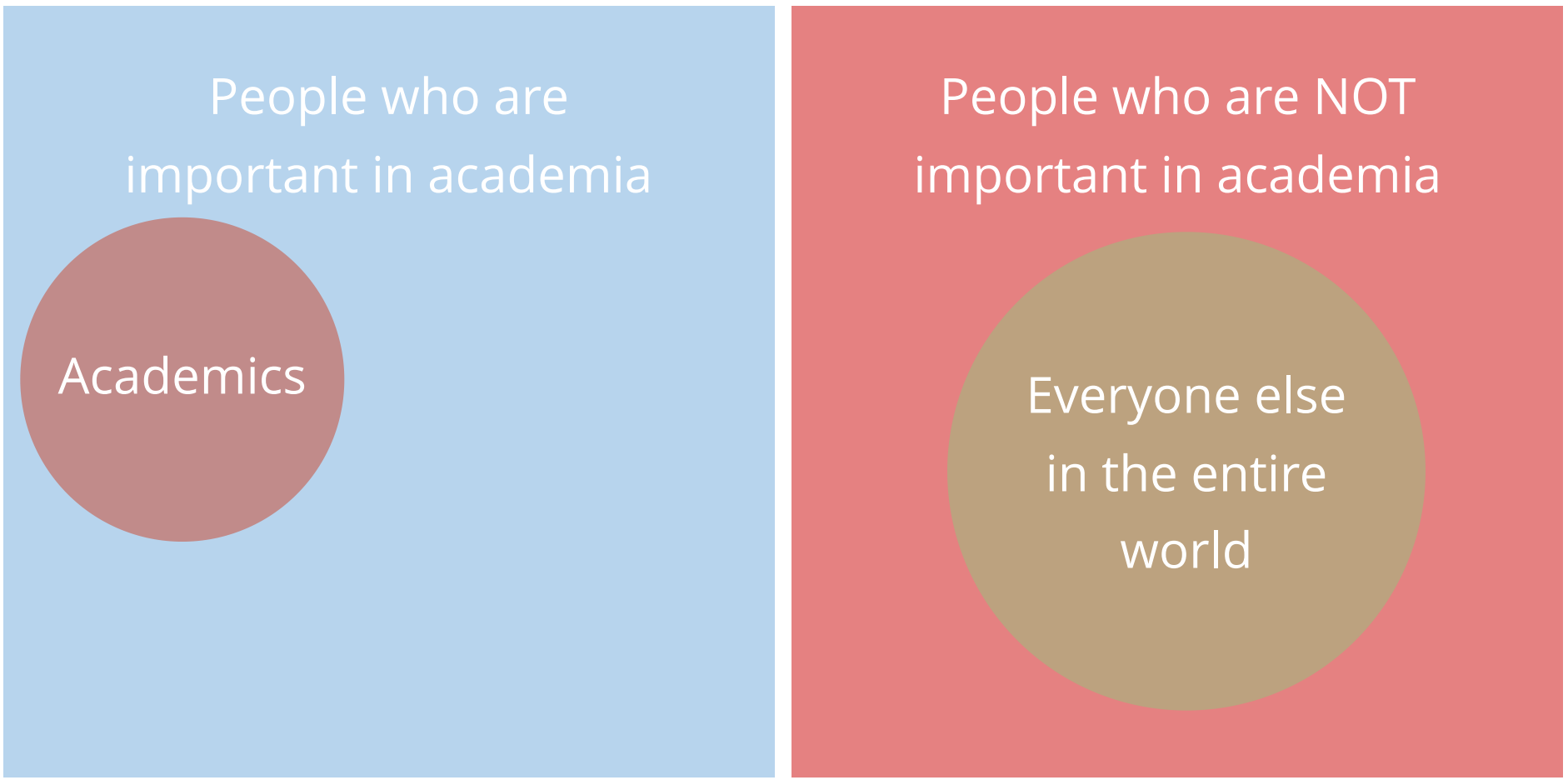
People who are important in academia

People who are NOT important in academia

The Venn of academic importance



The Venn of academic importance



People who develop software must be recognised

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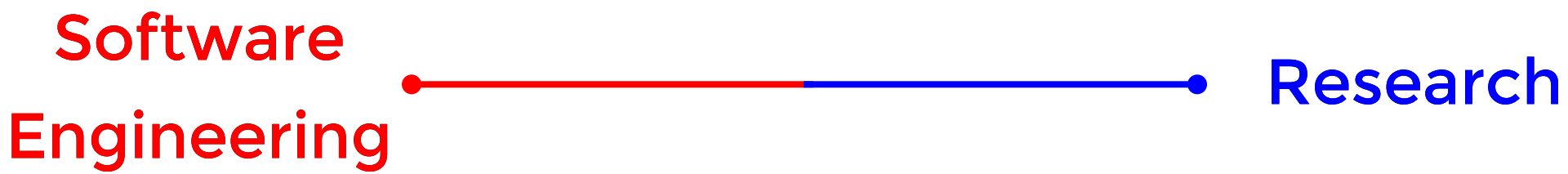
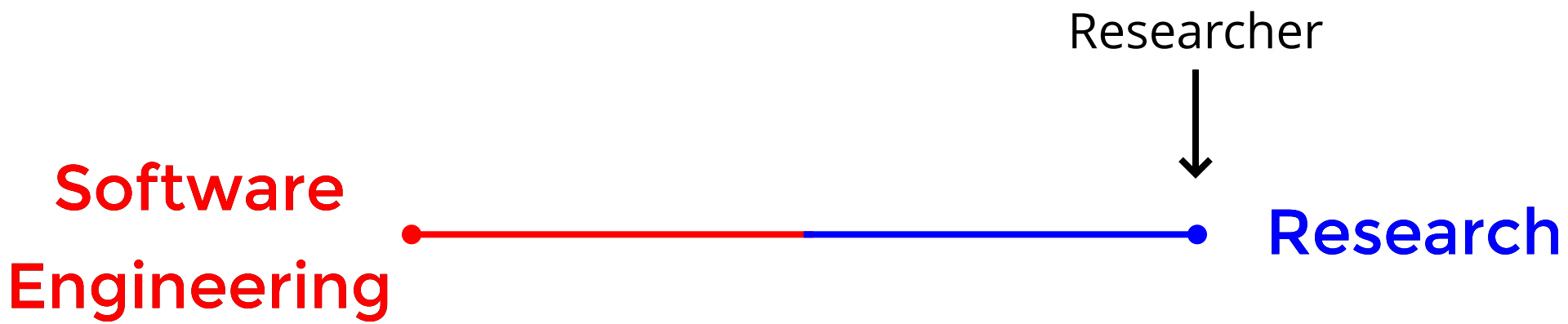
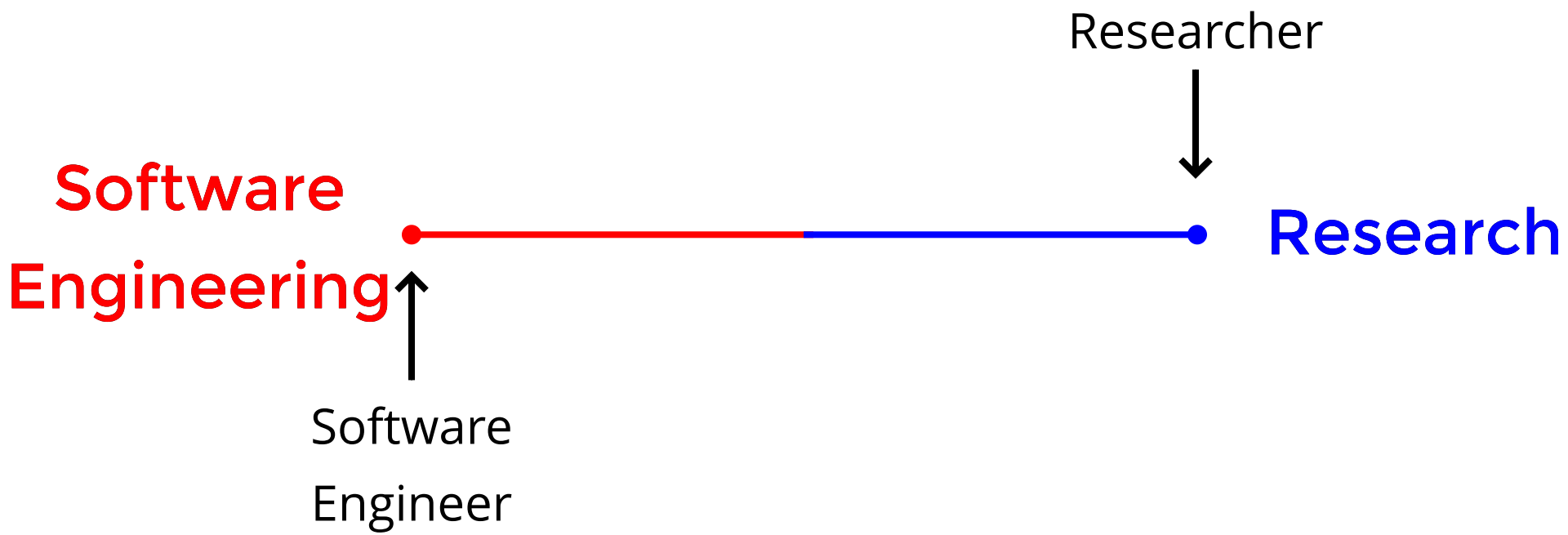
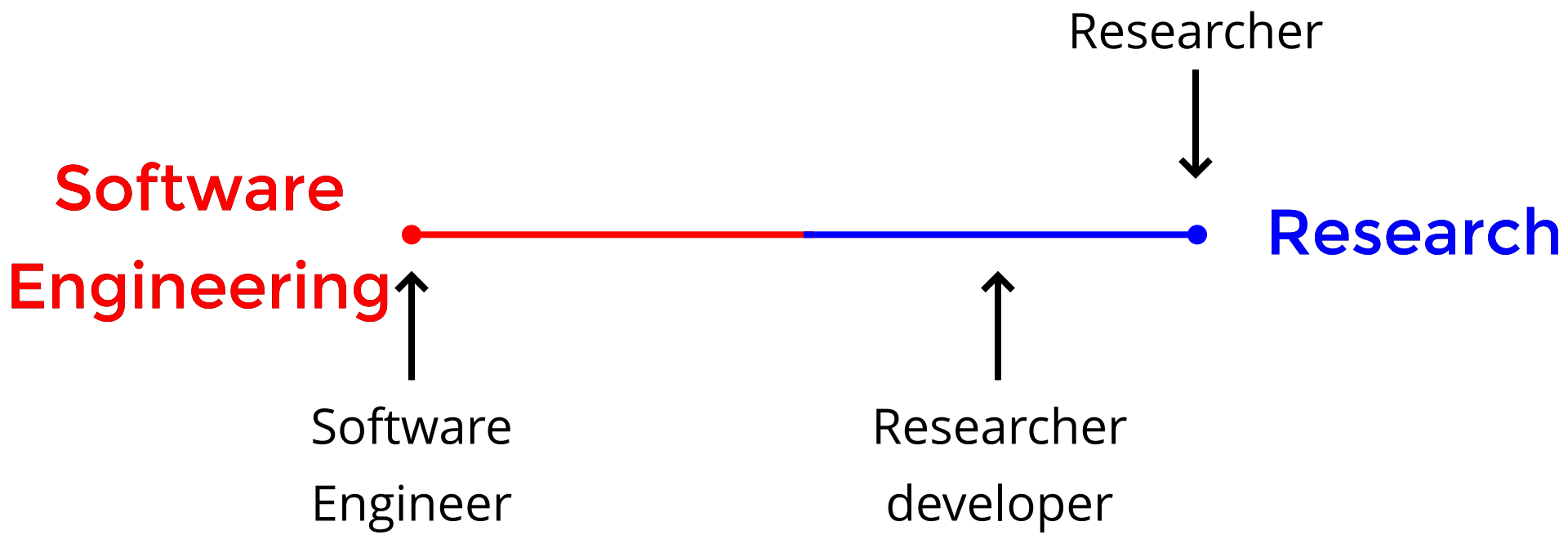
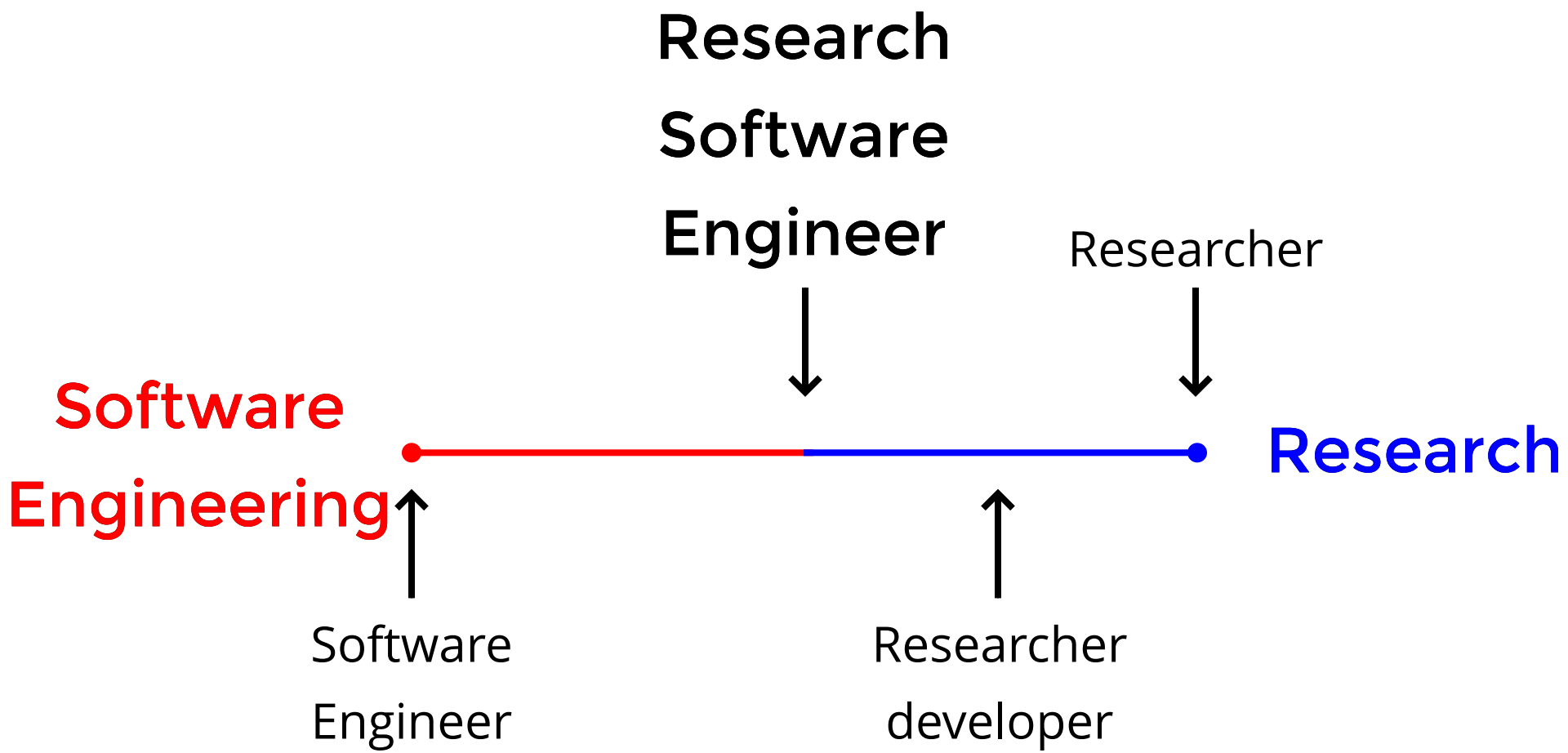

Software
Engineering
Research

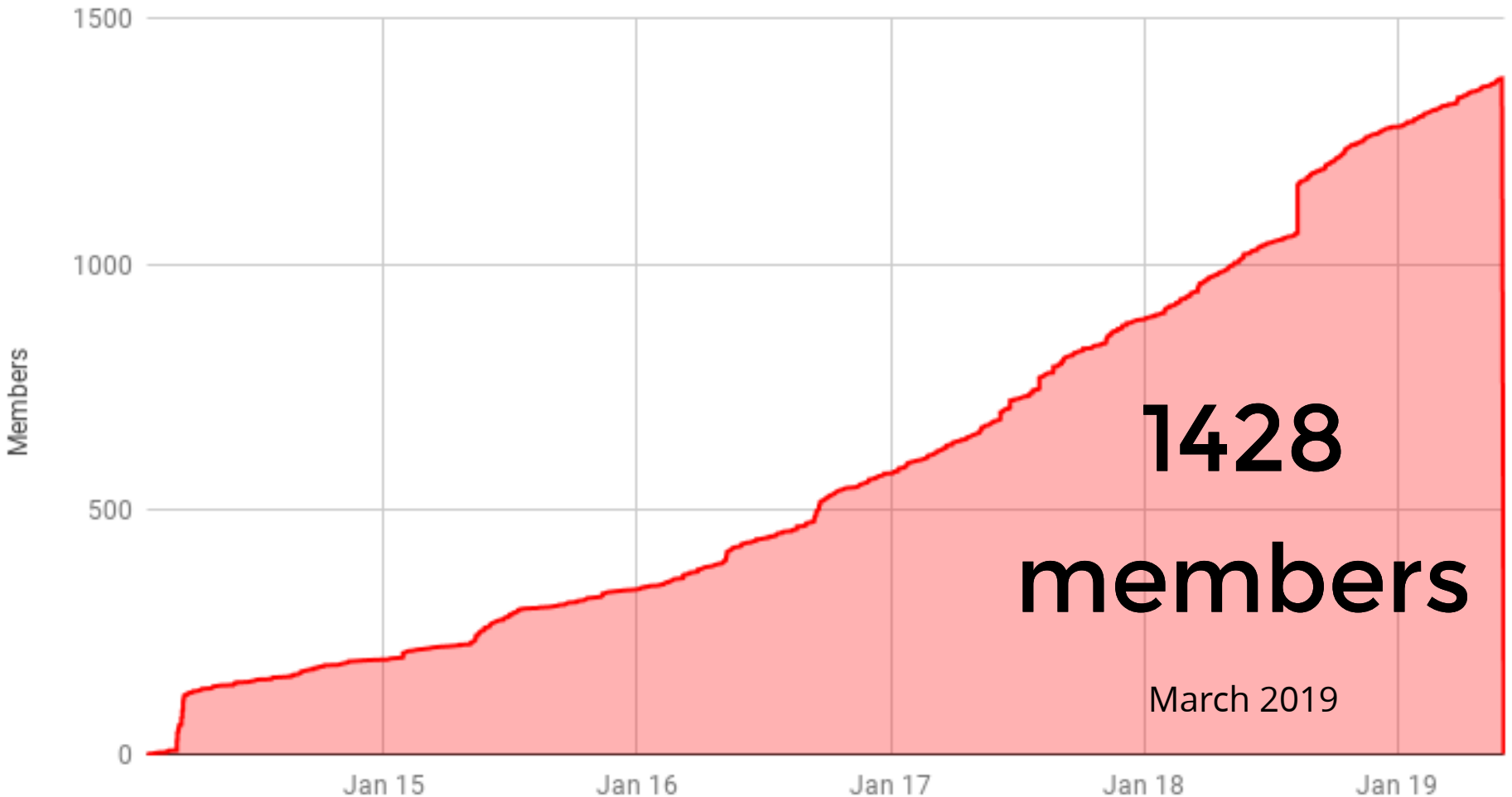

Researcher
Software
Engineering
Research

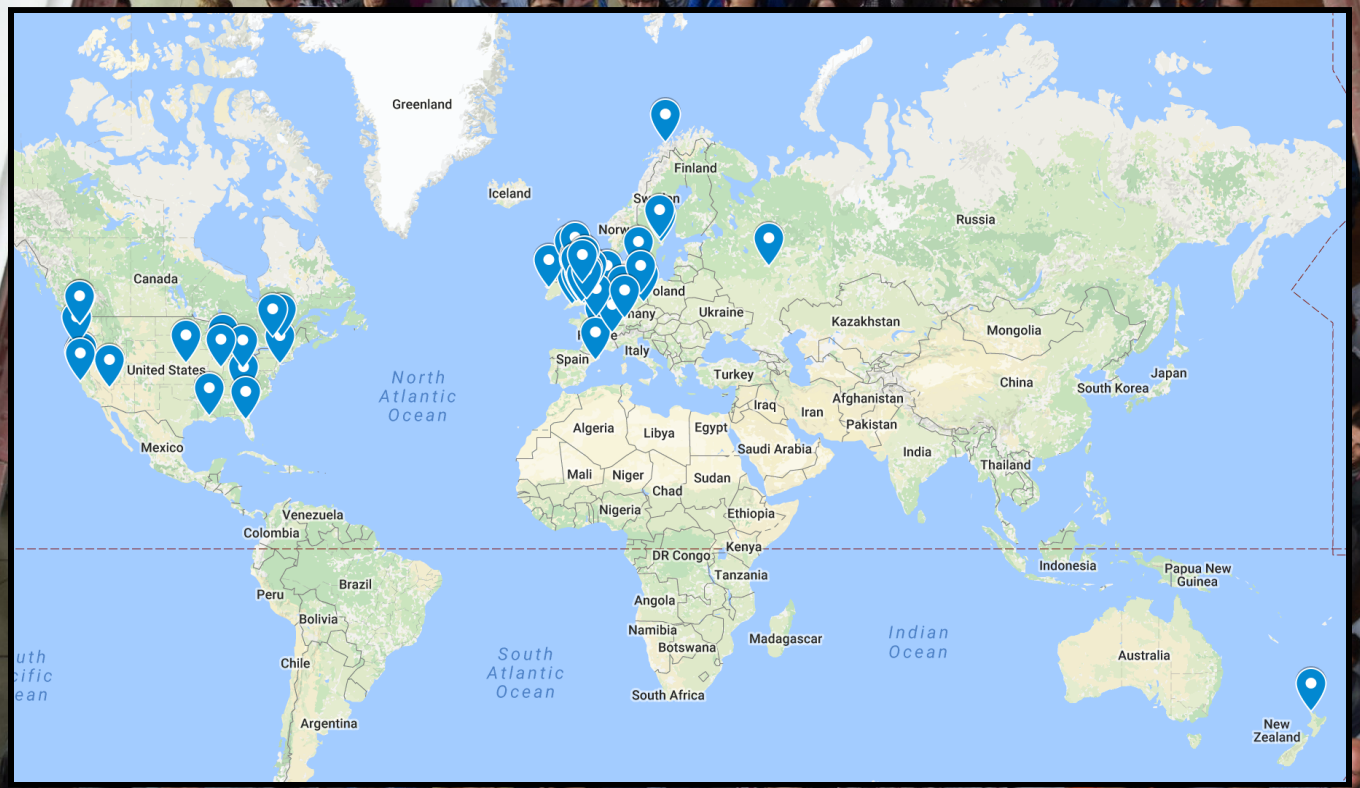

Researcher
Software
Engineering
Research
Software
Engineer


Researcher
Software
Engineering
Research
Software
Engineer
Researcher
developer


Research
Software
Engineer
Researcher
Software
Engineering
Research
Software
Engineer
Researcher
developer

UK RSE Association





RSE Conference

rse.ac.uk/conf/2019

Australia/New Zealand: @rse_aunz

Germany: @RSE_de

Netherlands: @nl_rse

Nordic: @nordic_rse

UK: @ResearchSoftEng

USA: us-rse.org

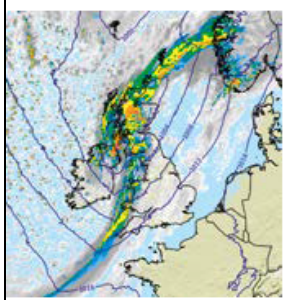
RSE Groups at 28 organisations

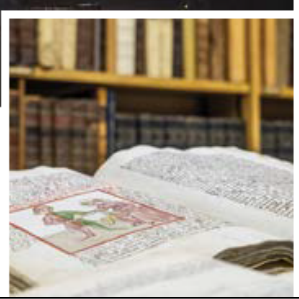
bit.ly/RSEGroupsInUK

- Alan Turing Institute
- University of Bath
- University of Birmingham
- University of Bristol
- University of Cambridge
- University of Cardiff
- UKAEA
- Imperial College London
- Francis Crick Institute
- Kings College London
- University of Leeds
- University of Leicester
- The University of Manchester
- Newcastle University
- Open University
- The University of Sheffield
- University of Southampton
- University College London
- University of Warwick
- Queen Mary University
- EPCC
- Daresbury Laboratory
- Oxford eResearch Centre
- Software Engineering Suppo...

UK Research and Innovation

The UK's research and innovation infrastructure: opportunities to grow our capability





http://bit.ly/UKRIRoadmap2019

p.114-126

SOCIETY OF RESEARCH
SOFTWARE ENGINEERING

www.society-rse.org

"Nothing is as powerful as an idea whose time has come"

Now what?

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191,000

outputs submitted

191,000

outputs submitted

185,000

outputs in publication categories

191,000

outputs submitted

185,000

outputs in publication categories

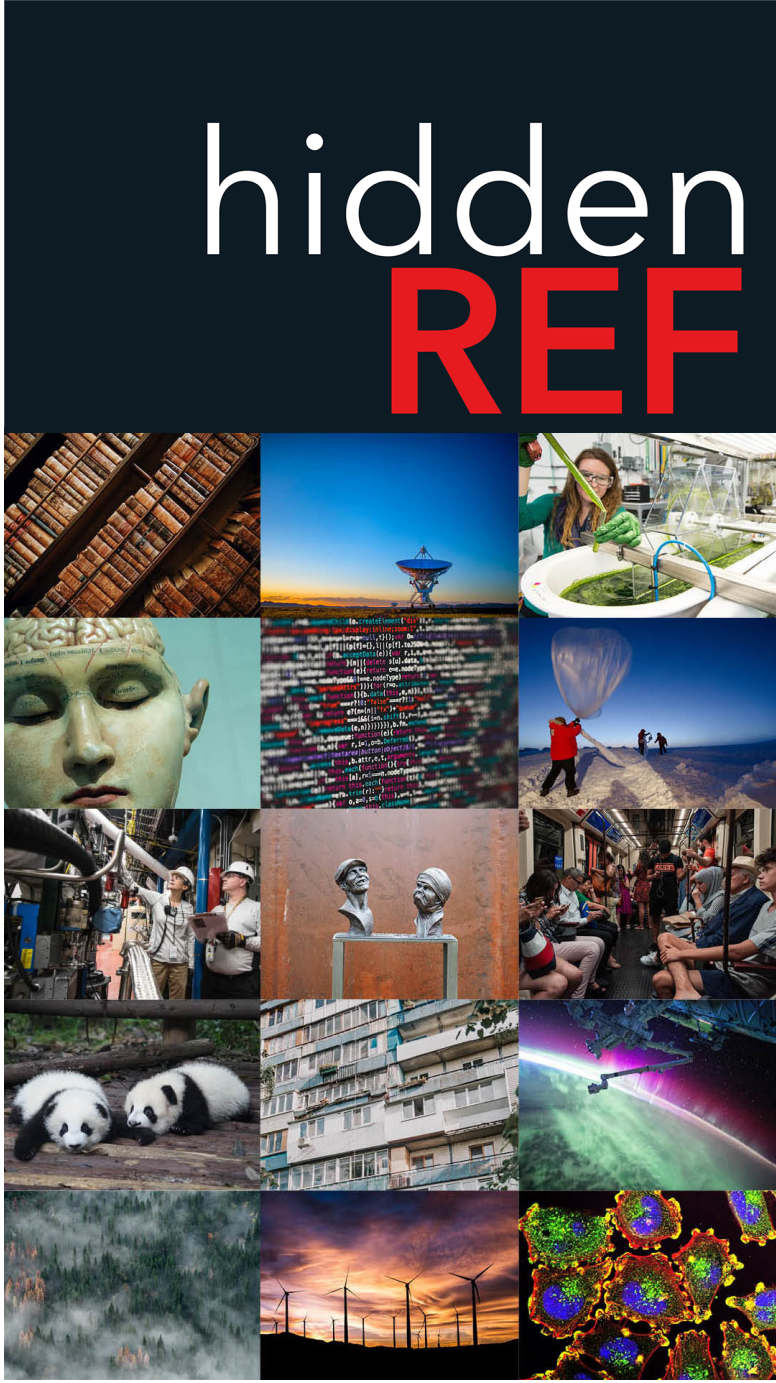
38

outputs in software category

The way in which the REF exercise is conducted overlooks many of the people who are vital to the success of research.

http://hidden-ref.org

@hiddenREF



Thank you!

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Studies and links

- Software survey:
  https://www.software.ac.uk/blog/2017-09-06-journey-reproducibility-excel-pandas
- Grants data analysis:
  https://github.com/softwaresaved/software_in_grants_GTR
- Publication analysis coming soon
- Top ten reasons to be an RSE:
  https://www.software.ac.uk/blog/2013-08-23-ten-reasons-be-research-software-engineer

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Where not stated on image:

Big data - Tumisu

Blockchain - mmi19

Cloud computing - Pete Linforth

Cybersecurity - Darwin Laganzon

DNA - Gerd Altman

IBM PC - Ruben de Rijcke

IOT - jeferrb

Machine Learning - Gordon Johnson

Pills in hand - Tom Bullock