Research Software Engineers in the Geosciences

EGU General Assembly 2019
April 11 2019

Conveners: Daniel Nüst, Anusuriya Devaraju, Niels Drost, Bernadette Fritzsch, David Topping

http://meetingorganizer.copernicus.org/EGU2018/session/29539

Goals for today

Introduce **national chapters**

Get to **know** each other

Share experiences

Discuss RSEng role in context of EGU & EGU GA

#EGU19RSE

Agenda

1. **Welcome** (Daniel Nüst, University of Münster, Session Convener)

2. **National RSE chapters**

- UK

- DE

- NL

4. **Lightning talks**

5. **Research Software Engineers in Geosciences**
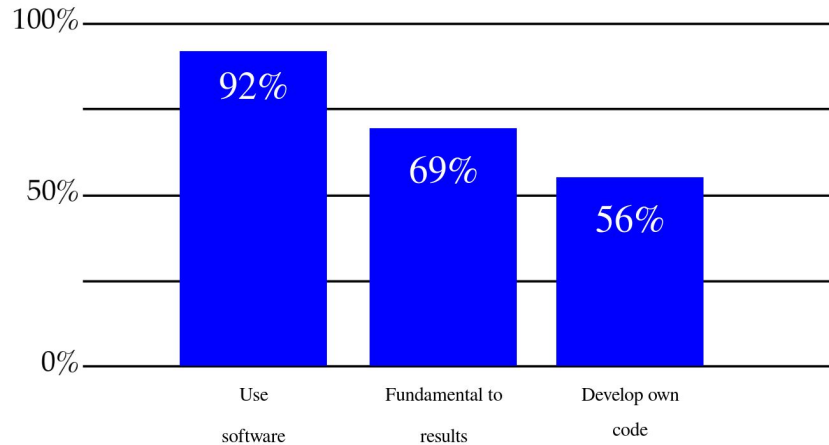
BETTER
SOFTWARE
BETTER
RESEARCH

The beginnings...

Back to **2010** The Software Sustainability Institute (SSI, UK) run a study

… *"It's impossible to conduct research without software, say 7 out of 10 UK researchers"*

What is the name for these people?

RSE

jobs.ac.uk
10,000 jobs assessed
~400 related to
software development
4%

Analyst Developer Analyst Programmer Analyst Programmer - SITS (x 3) Analyst/Programmer Applications Developer Applied Scientist Architectural Robotics Developer Assistant Data Programmer Assistant Project Manager Atmospheric Correction and Radiative Transfer Model Scientist Audio Software Developer - KTP Associate Bioinformatician Bioinformatician In Potato Genomics and Genetics Bioinformatician/Computational Bioscientist in Microbiology Bioinformaticians Bioinformatics Analyst Bioinformatics Postdoctoral Researcher Bioinformatics scientist Biometric Software Systems Developer Biorespository Software Developer C++ / 3D Graphics Software Engineer Casebooks Project Editor (Research Assistant/Associate) Climate Researcher (Research Associate) Clinical Study Programmer CoMPLEX Research Associate Computational Biologist / Bioinformatician Computational Scientist Computational Scientist in Computational Fluid Dynamics & Industrial Applications Computational Scientist in Structural Mechanics and Industrial Applications Computer Scientist Computer Vision Researcher Content Developer/Programmer Control Engineer-IMG - 3 posts CREATe Data Specialist Data Analyst Data Integration Coordinator Data Manager x3 Database and Software Engineer Database Manager/Researcher Database Programmer Digital Media Technician E-Learning Portal Manager (KTP Associate) e-Learning Systems Development Analyst e-Learning Systems Development Analyst (Moodle, SQL) E-Learning Web Developer E-Portfolio Learning Technologist Embedded Systems Engineer Engineering Technician Environmental Scientist EPSRC Studentship on Algorithmic Construction of Finsler-Lyapunov Functions Experimental Officer in Bioinformatics Experimental Psychologist Finance Assistant Gaia Alerts Software Developer Gaia Software Developer (Gaia UK Team) GIS Applications Specialist Graduate Programmer / Software Developer Graphics Programmer Health Data Manager / Scientist High Throughput Bioinformatician High Throughput Sequencing Bioinformatician (Two posts) HIVE Manager/ HIVE Co-ordinator HIVE Senior Researcher and Technical Lead Hydro-informatics Scientific Software Developer Image Analysis Manager for Cancer Imaging Information Systems Developer Instrumentation Engineer Investigator Statistician IT Developer IT Services Manager IT Services Specialist (e-Learning Systems) IT Support Technician (Unix / Windows Systems) Knowledge Transfer Partnership (KTP) Associate: Innovative Technologies LTD Knowledge Transfer Partnerships (KTP) Associate - Software Developer KTP Associate - Robot Vision Scientist (Research Fellow) KTP Research Associate (24 months) KTP Associate (Precision Agriculture Data Analyst) KTP Associate – Graduate Web Developer KTP Associate Junior Developer KTP Research Associate Learning Technologist Leicester Respiratory BRU IT Developer Linguist / Psycholinguist Maker Space Technician Marie Curie Early Stage Researcher Marie Curie Early Stage Researcher in Radar Rainfall for Integrated Water Quality Modelling Marine Earth Observation Scientists Medical Statistician Medical Statistician/Senior Medical Statistician Metrology Engineer Mobile Application Developer NASC IT Support - Programmer and Systems Administrator (Fixed-term) NIHR Research Methods Fellow PDRA on EU Project on Automated Multisensor Surveillance Planning Officer Policy Modeller 2014 Post- Doctoral Research Assistant INSTRON Post Doctoral Research Worker Post Doctoral Researcher in the application of Digital Technology Post-Doctoral Research Assistant in Simulation and Visualization Post-Doctoral Research Associate Post-Doctoral Research Associate (Pathogen Genomics) Postdoctoral Research Associate Postdoctoral Research Fellow - population genetics / evolutionary genetic Postdoctoral Fellow in Bioinformatics Postdoctoral Fellow in Computational Biostatistical Genetics Postdoctoral Research Assistant Postdoctoral Research Associate Postdoctoral Research Fellow Postdoctoral Research Scientist Postdoctoral Researcher in Declarative (Logic and Functional) Programming Postdoctoral Researcher Postdoctoral Scientist Postdoctoral statistician Postdoctoral Training Fellow - Statistical and Computational Genetics of Autism Principal / Senior Bioinformatician Principal Bioinformatician Product Development Engineer (Rail) Publishing Portal Web Developer Radio Frequency Engineer Reader in Computer Science Reporting Analyst Research (Software) Engineer Research Assistant Research Associate Research Fellow Research Image Data Manager, Biomedical Engineering Research Officer Research Officer – Social Protection Research postgraduate Research Programmer Research Scientist Research Scientist / Senior Research Scientist Research Scientist in Machine Learning and Computer Vision Research Software Developer Research Software Developer for the Herchel Smith Professor of Organic Chemistry Research Software Engineer Research Studentship Research Worker Researcher SAP Trainee Technical Analyst Scientific Officer with Michela Garofalo Scientist SEAHA Studentship: Extracting epidemiological data from collections SEEG Data Archive Manager Senior (Research Associate

Research Software Engineers (RSEs)

Researcher - Evolutionary and Computational Analysis of Infectious Disease (Phylodynamics) Senior Research Assistant Senior Research Associate Senior Research Associate – Molecular Modelling & Simmulation Senior Research Associate in Quantitative Clinical MRI Senior Research Fellow Senior Research Fellow/Research Fellow in Vibration Diagnostics and Prognostics/Digital Signal Processing Senior Research Laboratory Technician Senior Research Technician Senior Software Developer in Bioinformatics Senior Software Engineer / Software Engineer Senior Statistical Epidemiologist Senior Systems Administrator Senior Technician / Demonstrator (UCMK) Senior Web Developer SharePoint Developer Software Developer Software Developer (Bioinformatics) Software Developer (KTP Associate) Software Developer x 2 Software Developer/Programmer Software Developers in e-Learning Software Engineer Software/ Database Developer (KTP Associate) Sports Programme Manager Statistical Geneticist Statistical Programmer/Data Scientist Statistician Statistician/Epidemiologist Student and Enrolment Services Manager SWCAR Information Assistant System Administrator Systems Developer Systems, Data and Applications Team Leader Teaching Fellow in Computational Methods UTRCI Research Scientist, Control Systems Web Application Programmer Web Developer

194 different job titles

Motivation: **people** behind research software

Inadequate recognition of research software engineering, so we want to boost the visibility of issues:

- Lack of recognition of research software development as **scientific** contribution;
- Missing link between research software development and the scientific **reputation** system;
- **Redundant and parallel** software developments;
- Insufficient **skills** in software engineering;
- Lack of **quality** standards for the development, usability, and review of research software.

http://www.de-rse.org/en/

https://slides.com/simonhettrick/why-we-need-careers-for-research-software-engineers-10-13-17#/5/5

National Chapters/Orgs

G B   D E   N L

N O   S E   F I   D K   I S

A U   N Z

U S

NL-RSE

nl-rse.org

150+ members
35+ organizations

de-rse.org

deRSE19 conference

@rse4nfdi

RSE4NFDI

Safeguarding software sustainability in the NFDI

Formal details

Planned title of the consortium
Safeguarding software sustainability in the NFDI

Acronym of the planned consortium
RSE4NFDI

Lead institution or facility
Friedrich-Schiller-Universität Jena

Potential members and participants as well as participating infrastructures of the planned consortium

- Cluster of Excellence Matters of Activity, Alexander Struck
- Deutsches Krebsforschungszentrum, Christian Busse
- Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Stephan Druskat
- Fraunhofer FOKUS, Ina Schieferdecker
- Friedrich-Schiller-Universität Jena, Frank Löffler
- Helmholtz-Zentrum Potsdam - Deutsches GeoForschungsZentrum GFZ, Martin Hammitzsch
- Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Uwe Konrad
- Helmholtz-Zentrum für Umweltforschung GmbH - UFZ, Thomas Schnicke
- Humboldt-Universität zu Berlin, Institut für deutsche Sprache und Linguistik, Anke Lüdeling
- IT-Zentrum "Computer and Media Service", Humboldt-Universität zu Berlin, Malte Dreyer
- Max-Planck-Institute for the Science of Human History, Robert Forkel
- Potsdam Institut für Klimafolgenforschung (PIK), Jan Philipp Dietrich
- Servicezentrum eSciences der Universität Trier, Marina Lemaire
- Sustainable Lifecycle Management for Scientific Software (SuLMaSS) Project; Karlsruhe Institute of Technology (KIT) (Institut für Biomedizinische Technik; Axel Loewe; Institut für Angewandte Materialien; Michael Selzer; KIT-Bibliothek, Robert Ulrich; Steinbuch Centre for Computing, Felix Bach), Universität Freiburg (Institut für Experimentelle Kardiovaskuläre Medizin, Gunnar Seemann)
- The European Virus Bioinformatics Center, Manja Marz
- TU Dresden, Center for Information Services and High Performance Computing (ZIH), Andreas Knüpfer
- University Medicine Greifswald, Dagmar Waltemath
- University of Freiburg, de.NBI-epi, Björn Grüning
- University of Münster - Institute for Geoinformatics, Daniel Nüst, and Zentrum für Informationsverarbeitung, Raimund Vogl
- Visualization Research Center (VISUS) / Institute for Visualisation and Interactive Systems (VIS), University of Stuttgart, Guido Reina
- Weizenbaum-Institut für die vernetzte Gesellschaft, Stefan Ullrich
- Westsächsische Hochschule Zwickau, Nico Herbig
- ZB MED - Information Centre for Life Sciences, Konrad Förstner
- 52°North Initiative for Geospatial Open Source Software GmbH, Simon Jirka

Satzung des de-RSE e.V.

1. Name, Sitz, Geschäftsjahr
   i.   Der Verein trägt den Namen de-RSE e.V.
   ii. de-RSE hat seinen Sitz in Berlin.
   iii. Er ist in das Vereinsregister beim Amtsgericht Charlottenburg von Berlin eingetragen.
   iv. Das Geschäftsjahr entspricht dem Kalenderjahr.
2. Gemeinnützigkeit

RSE Slack **#geo**

Signup
https://docs.google.com/forms/d/e/
1FAIpQLSc9LqOWGwA1xDvSgy8
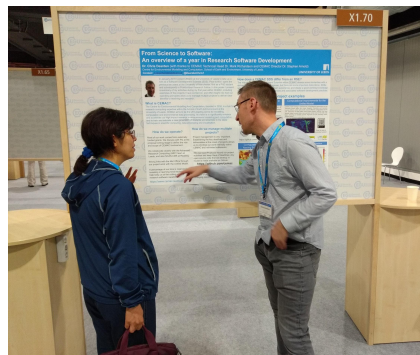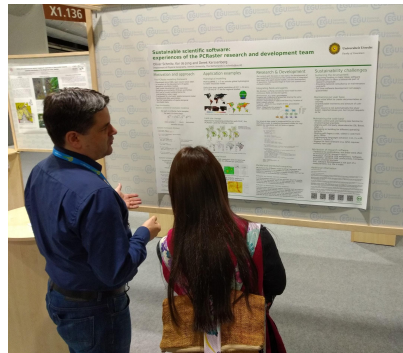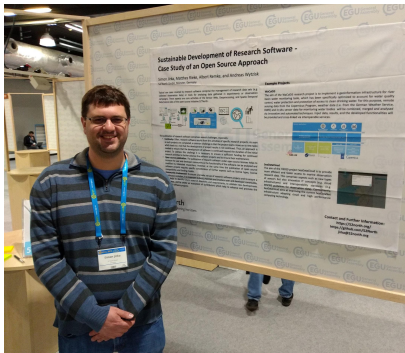1eimcb9s0cNBFso0zv0_HoZz16G
1M5w/viewform?c=0&w=1

Self-Signup for UK:
https://ukrse.slack.com/join/signup

ESSI3.5 RSEs: Researchers who Code

Poster session - https://meetingorganizer.copernicus.org/EGU2019/session/30949

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The tale of the Informatics Lab: how we started a multidisciplinary research group in the public sector
Niall Robinson and Alberto Arribas

From Science to Software: My first year in Research Software Development
Chris Dearden and Mark Richardson

Sustainable scientific software: experiences of the PCRaster research and development team
Oliver Schmitz, Kor de Jong, and Derek Karssenberg

Building the Urban Observatory: Engineering the largest set of publicly available real-time environmental urban data in the UK
Luke Smith and Mark Turner

RSEs at Academic Conferences
Daniel Nüst and David Topping

Sustainable Development of Research Software - Case Study of an Open Source Approach
Simon Jirka, Matthes Rieke, Albert Remke, and Andreas Wytzisk

Building expertise at the Netherlands eScience Center
Romulo Goncalves, Jason Maassen, Rob van Nieuwpoort, and Niels Drost

Survey

40 participants at RSE TM 2018 - 5 respondents

11 respondents after RSE Poster Session 2019

We need more thazn just email addresses to make a change. The survey can help us argue our case for more acknowledgement of software and RSE work with ESSI, EGU, EGU journals, …
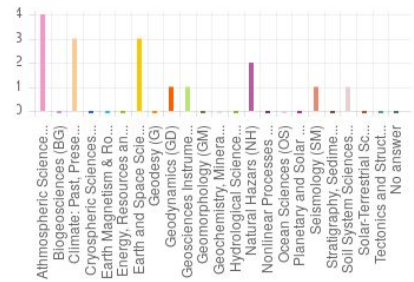
☞ **bit.ly/rse-survey-egu**

I have heard the term RSE before and have a rou it means.
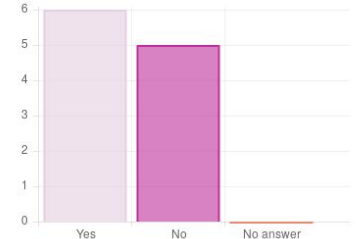
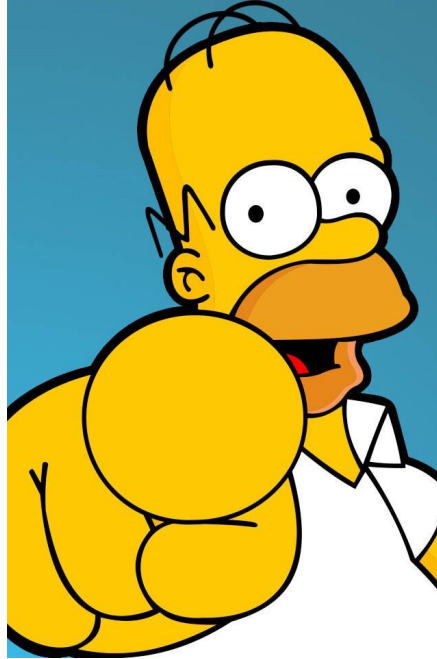Would you identify/describe yourself as an RSE? "Research Software Engineers are people in a variety of roles who
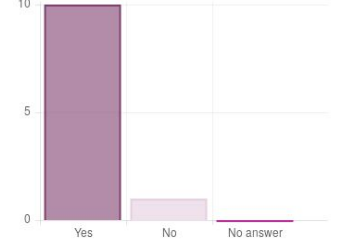
Which is your primary EGU division?

Open floor

#EGU19RSE

Discussion/Next

[This slide includes some notes by DN on the discussion at the meeting.]

- Survey!
- Discussion comments, ideas
  - UK: Doctoral schools as mechanism to establish more RSEs
  - Software brings different perspective: session on python, on large data processing, on... Finding users,...
  - RS institutes
  - "Like the scientific challenges, don't like the academic challenges"
  - French system (SK), diversity can also be a problem (position name limits possibilities)
  - Who is developing software across institutes? Bus factor!
  - Make a great debate next year! Bring in someone big… debate probably more about the how than the "if"
  - Session should be about software, not about RSEs - how to delineate from existing sessions? How to reach users?
  - Coordinate on courses about…
    - Software engineering, practices
    - Session for first year phds
    - Something with mentoring? Submit your code, RSE reviews, in-person discussion
  - Software audience
  - More sessions, see what sticks?
  - HPC sessions lived off direct invites… need domain spokespeople to reach communities
- Tasks
  - Create the mailing list we planned in 2018