

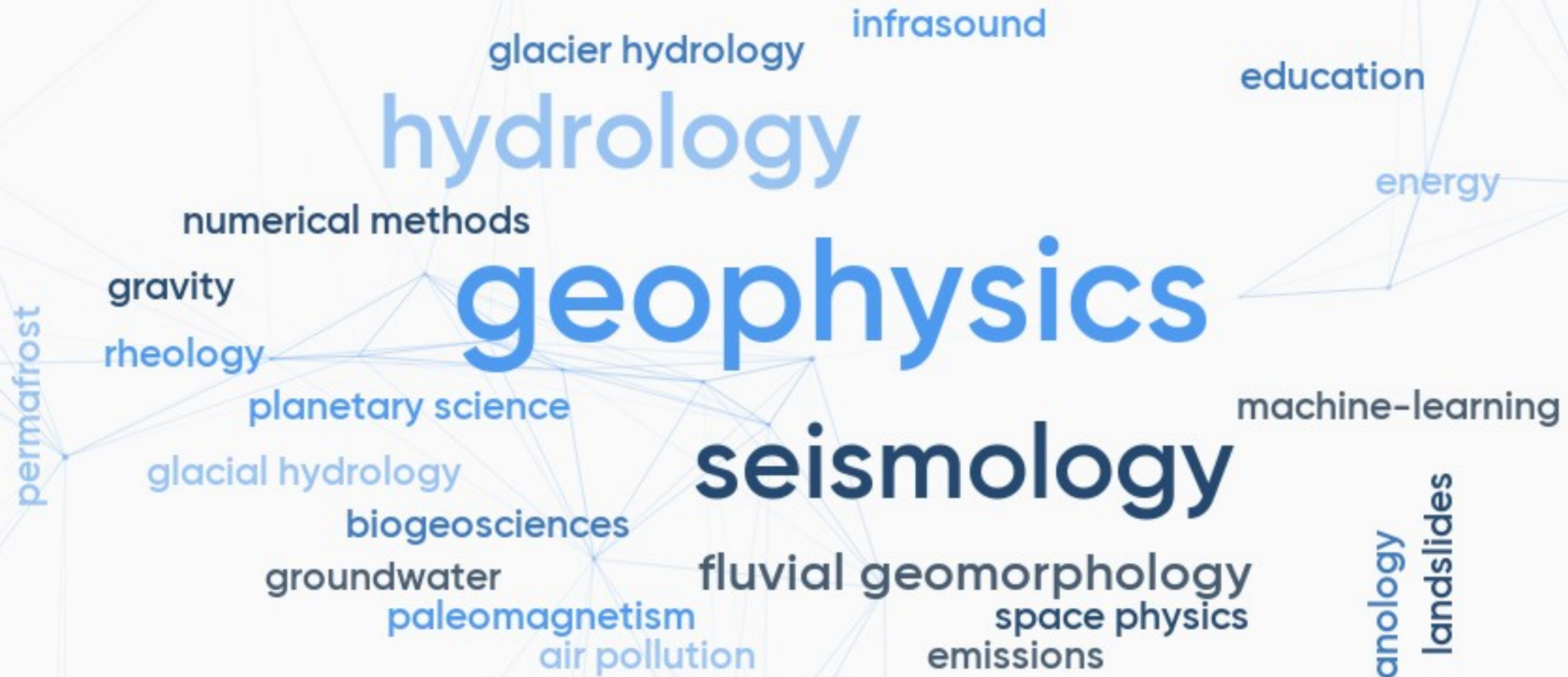
# Best Practices for Developing and Sustaining Your Open-Source Research Software



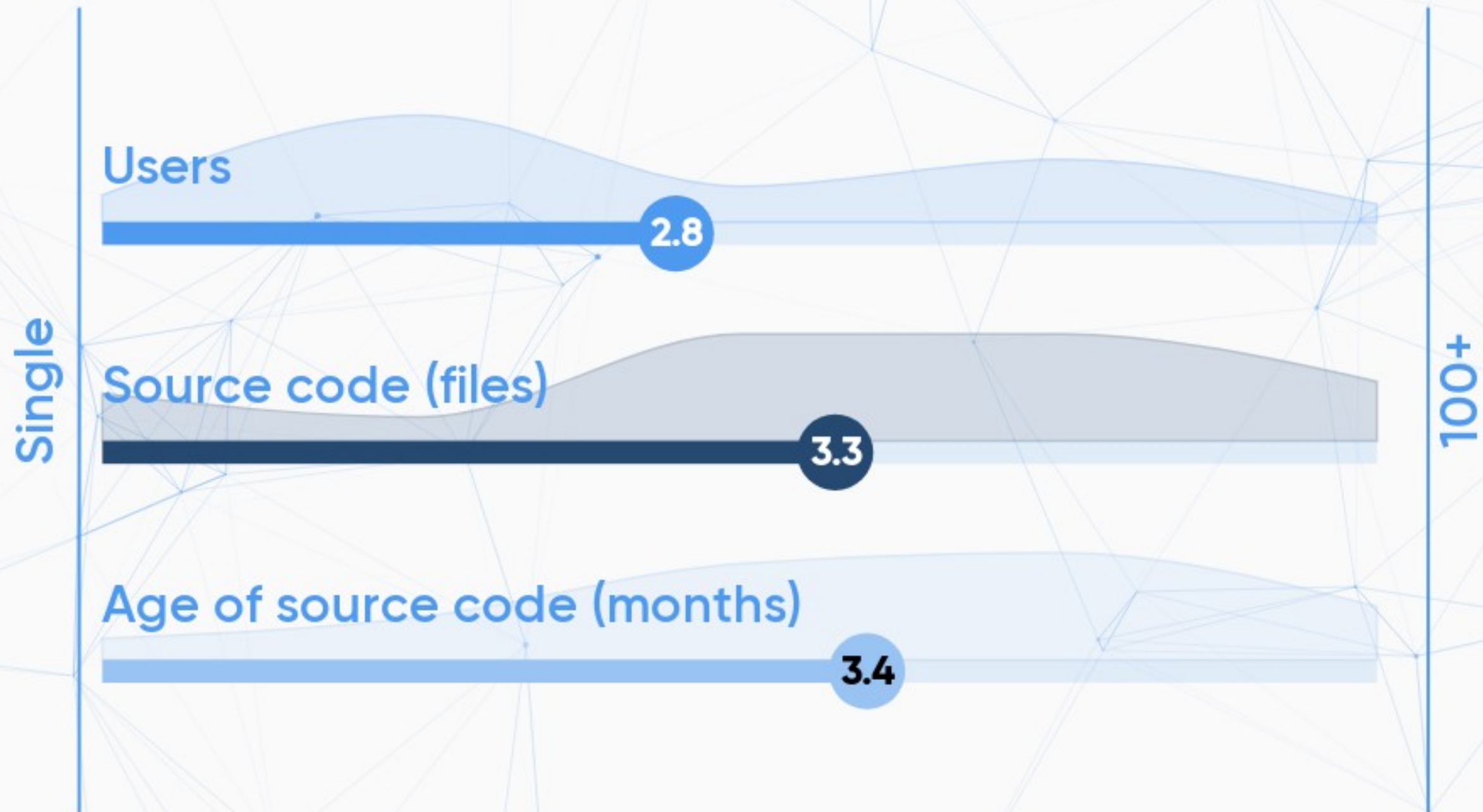
Since you are here we think you are interested in developing scientific software. But scientific software comes in many flavors. Let's find out what you understand as research software.



# What field are you working in?

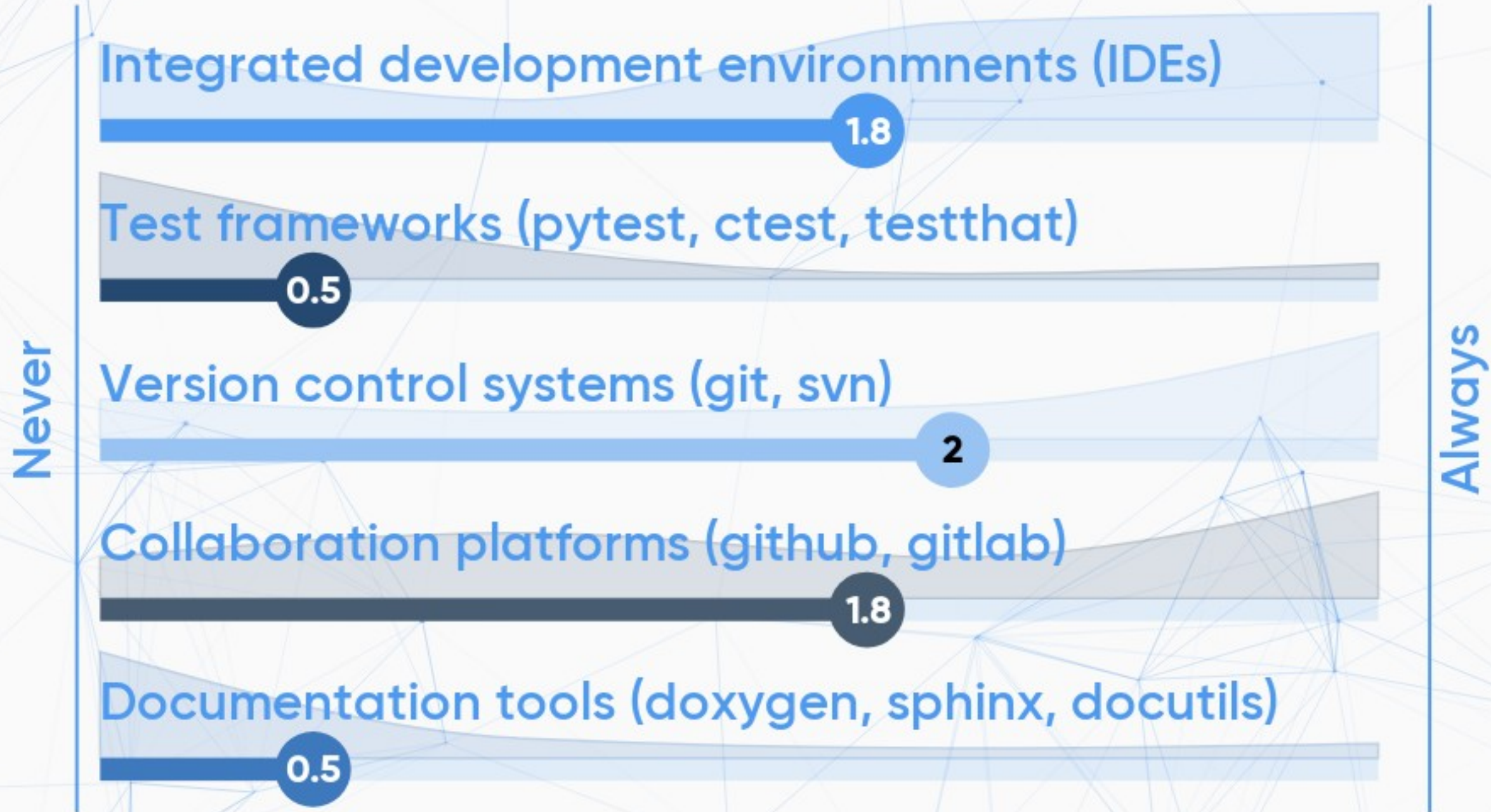


# How big is your software project?





# Which software tools do you use?

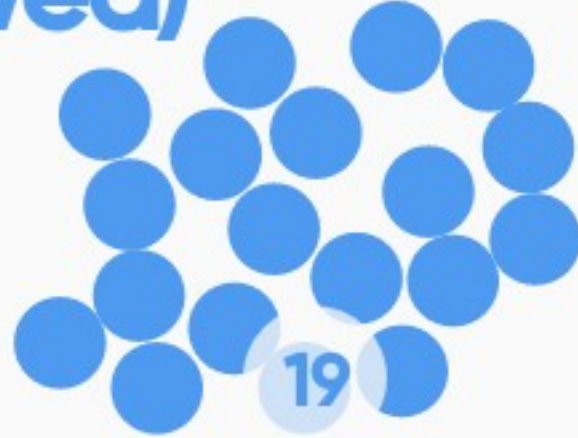




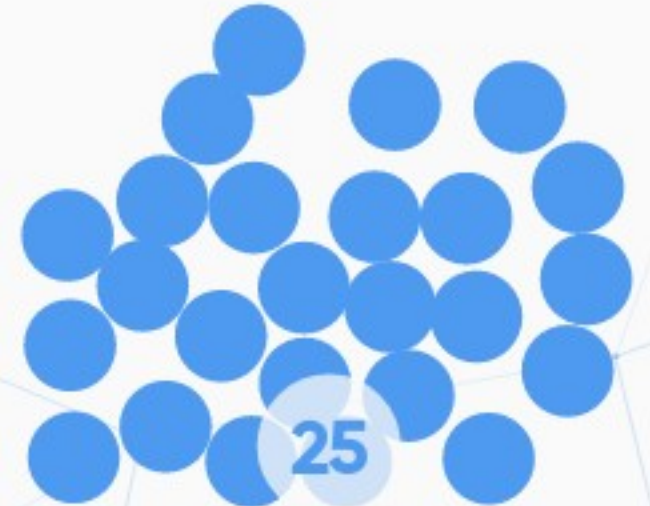
# Which part of the workshop are you most interested in? (multiple answers allowed)



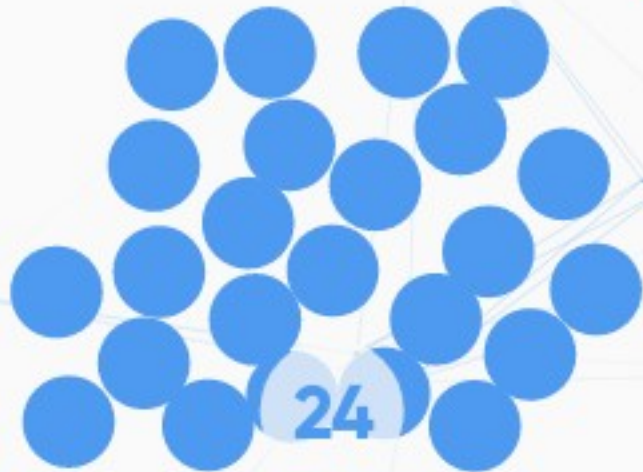
Community  
building



Git, Github,  
Collaboration



Testing



Software  
documentation



Other



**Let's start**



# Your target audience / mission / vision statement

Mission: To provide well-documented tools to build finite element codes for a broad variety of PDEs, from laptops to supercomputers.

To provide flexible, well-documented array processing tools for infrasound research.

Mission: To provide students or junior researchers with a ready-to-use demo software for exploration geophysics

TDGP is a general purpose 1D/2D/3D trans-D MCMC geophysical inversion package

Provide researchers easy to use tools to provide the finishing touches on figures

to provide city planners with a fast, reliable tool for mapping landslide risk

To provide geophysicists with a platform to test and predict the result of field surveys in order to better plan and interpret those surveys.

I would like to provide research scientists with a flexible and quality controlled pipeline for analyzing omics data that is open-source to provide users with an effective and consistent way to process data

A user-friendly, transparent and reproducible data processing package.



# Your target audience / mission / vision statement

Target audience: students at all levels and early-career scientists who are learning exploration geophysics.

To provide researchers in geophysics with a tool for 3D magnetotelluric modeling and inversion that is efficient, flexible, and easy to use and creatively modify.

**TDGP is a general purpose  
1D/2D/3D trans-D MCMC  
geophysical inversion package  
written in Julia**

**use this software to optimize  
the pumping**

To provide infrasound researchers with a modular, approachable tool to locate an infrasonic source using a collection of single sensors on local or regional scales.

Target audience: Educators that want to demonstrate the advantages and drawbacks of different methods of MHD simulation for different applications.

Extensible GUI for graduate students and researchers that incorporates useful geophysical packages in near-surface seismology

**Researchers**

Application scientists, policymakers who want to evaluate the stationary air pollution sources in a built environment.



# Your target audience / mission / vision statement

GNSS community/to provide flexible platform for processing GNSS data/to process GNSS daily data with highest possible precision and reliability

To provide hydrologist wwith a well-documented and extensible code base addressing a broad ranger of socio-hydrology question on different spatial scales

To provide scientists, regulators and operators with a well-documented and extensible code base to support new understanding and regulation of methane emissions from gas fields.

Application Scientists that use Quantum Diamonds Microscopes (QDM).To provide QDM scientific users with software for running their QDMs and software for analyzing QDM data.To create a network and community of QDM users.

Mission: To provide geoscientists with well-documented data analysis tools to limit redundancy in field.

To create an open-source software that provides a fully automated detection of changes in waterbodies.

Mission: To provide geoscientists with well-documented and extensible code base for machine learning applications.

Target audience: Application scientists, technical analysts Mission: Produce high quality earthquake information Vision: Create extensible, modular, documented, open-source software that is accessible to scientific and technical end-users

To provide researchers, educators, and policymakers in New York State (and beyond) a platform to test possible outcomes of future electricity mixes on power system operations.



# Your target audience / mission / vision statement

a



**Let's take a break**



# Questions and Answers



0 questions

0 upvotes

# Feedback

Strongly disagree

The content was interesting/useful

4.7

The pace and level was appropriate

3.9

I would recommend this workshop to colleagues

4.6

Strongly agree



# Let us know how we did and what can be improved (what do you want to see next year?)

Some more examples of successful OSS projects

Hands-on for testing and continuous integration.

In the testing portion of the class. It would have been nice to walk through setting up a test instead of test execution. (e.g. a simple code, writing the test and the error and then running it).

Perhaps have two shorter workshops at different skill levels. Overall, this was a fantastic workshop.

Less time on GitHub, lots of good online tutorials already. More time in all other places (specifically Travis, very useful and few people knew about)

Very nice workshop. One additional topic of interest would be how these tools work with mixed language projects, like python wrapping c.

It's great!

Perhaps more time or a separate session on git / GitHub – I feel that there was proportionally too much time devoted to this topic. (Though it is a very crucial tool!)

Spent too much time on git. Would have liked info on Docker containers. Really liked the example project repo's and documentation examples - this will give me lots of new ideas for the software project I'm working on.



# Let us know how we did and what can be improved (what do you want to see next year?)

I expected more high level content, that is why I did not like the step by step course on github; just general philosophy like the test part would be much better and save time.

Really appreciated this workshop - super helpful. No way to have covered everything; other potential topics include ways to package software for easy installation, pros and cons of different software platforms/languages.

I think this tutorial is great for the span of expertise in the room. I would suggest only a Level 1, Level 2 workshop where level one covers collaboration and Level 2 can go more in depth on Testing, CI, and Docs

Great course! Maybe concentrate on 1 subject. (testing or automatic documentation). This time it was github, maybe next time travis or sphinx

**Please send slides as an email!**

Load up the pre-workshop work with the easy-to-follow stuff. Then you can have a troubleshooting time for each section of material. And otherwise focus on the ideas. Trying to troubleshoot individually during ongoing lecture was a bit distracting.