Bhavesh Patel, PhD
Founder/Lead
FAIR Data Innovations Hub

Sanjay Soundarajan, MSc
Lead Software Developer
FAIR Data Innovations Hub

Making Biomedical Research Software Findable, Accessible, Interoperable, Reusable (FAIR) with FAIRshare

fairdataihub.org
calmi2.org

Why Make Software Reusable?

Software has become an essential part of biomedical research

Data processing, analysis, visualization, computational modeling, etc.

Research software: Python scripts, Jupyter notebooks, R code, Web apps, etc. that are integral parts of a research outcome.

Making research software reusable is therefore crucial to:

Ensure reproducibility of research results

Increase the pace of scientific progress

What's the Problem?

No clear actionable guidelines are available to make software reusable!

The FAIR Principles for Research Software (FAIR4RS Principles) provide a framework for optimizing software reusability but remain general by design, for example:

- "Software is described with **rich metadata**"
- "Software must have a **clear and accessible license**"

Review of the 4,000+ biomedical repositories created in 2021 on GitHub:

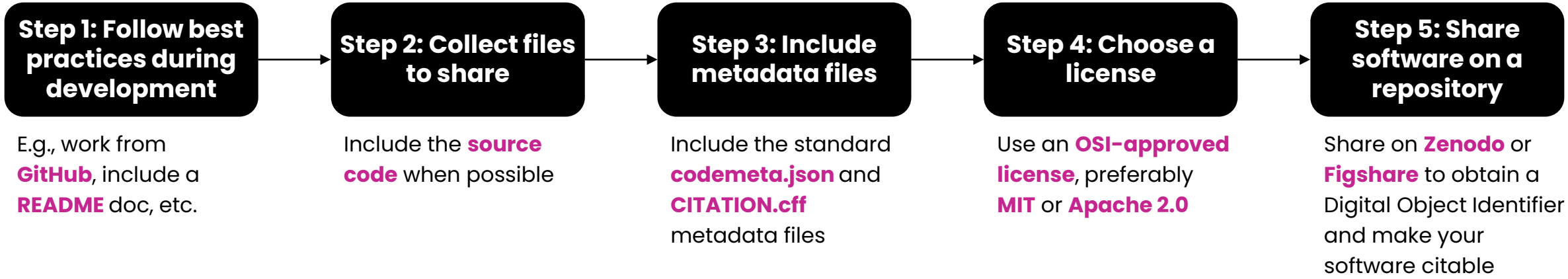
97% **Don't** have a license specified

100% **Don't** have any standard high-level metadata files (codemeta.json or CITATION.cff)

Our Solution: FAIR-BioRS guidelines

Actionable guidelines for making biomedical research software FAIR such that all the requirements of the FAIR4RS Principles are satisfied

- Based on a review of relevant literature and resources (including NIH guidelines)
  Details available in our preprint: https://doi.org/10.1101/2022.04.18.488694



- Open for community feedback
  https://github.com/fairdataihub/FAIR-BioRS-guidelines

Our Solution: FAIRshare

Cross-platform desktop software
https://github.com/fairdataihub/FAIRshare

Open source and free (MIT license)

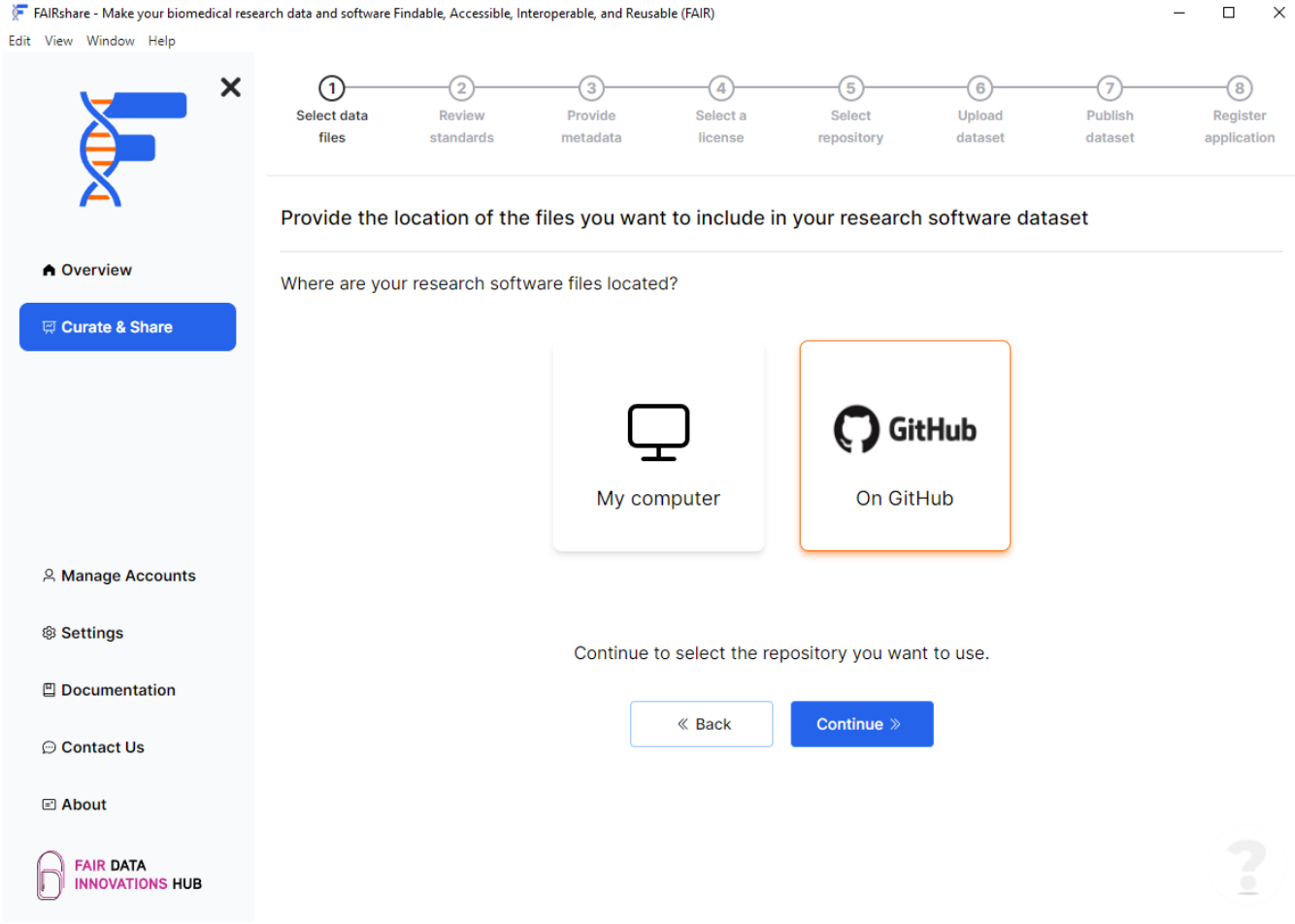
Goal: Simplify for researchers the process of making biomedical research data and software FAIR

How? Combine intuitive user interface and automation

Our Solution: FAIRshare

Includes a workflow for guiding users step-by-step into making their biomedical research software FAIR as per the FAIR-BioRS guidelines

- Works with software files located on the computer or on GitHub
- Provides convenient interface to enter metadata and automatically create codemeta.json and CITATION.cff files
- Provides intuitive interface to select a license and view license terms
- Supports sharing on Zenodo and Figshare
- And much more!



Takeaways

What do we need to do?

Optimize the reusability of biomedical research software

How do we do it?

Follow the FAIR-BioRS guidelines

What can make our life easy?

FAIRshare is available to assist

How can everyone help in this effort?

Use FAIRshare and provide feedback on the FAIR-BioRS guidelines!

Thank you!

bpatel@fairdataihub.org

fairdataihub.org

Download this presentation:
https://tinyurl.com/fairshare2022

FAIR DATA
INNOVATIONS HUB

CALIFORNIA MEDICAL
INNOVATIONS INSTITUTE