Codefair: Your Personal Assistant for Developing FAIR Software

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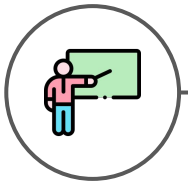
FAIR DATA
INNOVATIONS HUB

About This Presentation

12 min + 3 min Q&A

Anyone developing, managing, funding research software

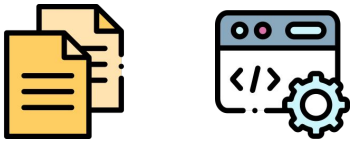


Learn how to make research software FAIR with Codefair

FAIR

FAIR
Background

FAIR (Findable, Accessible, Interoperable, Reusable) Principles (2016):
High-level instructions to make research outcomes reusable



Established for of all digital research objects including software

https://doi.org/10.1038/sdata.2016.18

FAIR
Software

FAIR Principles for Research Software (FAIR4RS Principles, 2022):
17 principles tailored for research software

F1. Software is assigned a globally unique and persistent identifier.
F1.1. Components of the software representing levels of granularity are assigned distinct identifiers.
F1.2. Different versions of the software are assigned distinct identifiers.
F2. Software is described with rich metadata.
F3. Metadata clearly and explicitly include the identifier of the software they describe.

(and more)

https://doi.org/10.1038/s41597-022-01710-x

FAIR

How to practically make software FAIR?

FAIR Biomedical Research Software (FAIR-BioRS) Guidelines (2023):
Minimal, actionable guidelines for making software FAIR

- ❏ Include a LICENSE file
- ❏ Include codemeta.json and CITATION.cff metadata files
- ❏ Archive each version of your software, e.g. on Zenodo
- ❏ Etc.

https://doi.org/10.1038/s41597-023-02463-x

FAIR

Challenges for making software FAIR

Lack of awareness/training

What is FAIR? What is a codemeta.json file? What is Zenodo?

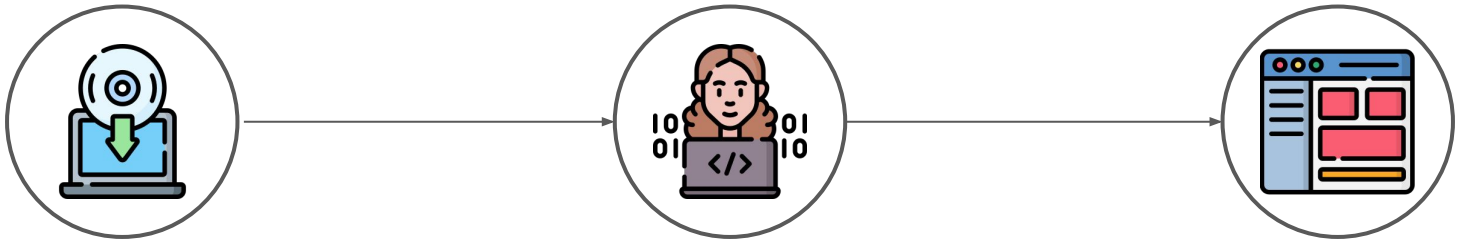
Time consuming

For each release, DOI, update release date, version number, and authors in codemeta.json, CITATION.cff, CHANGELOG, archival repository metadata

Codefair

Codefair
Overview

Codefair is a free and open source GitHub app that acts as your personal assistant for making software FAIR



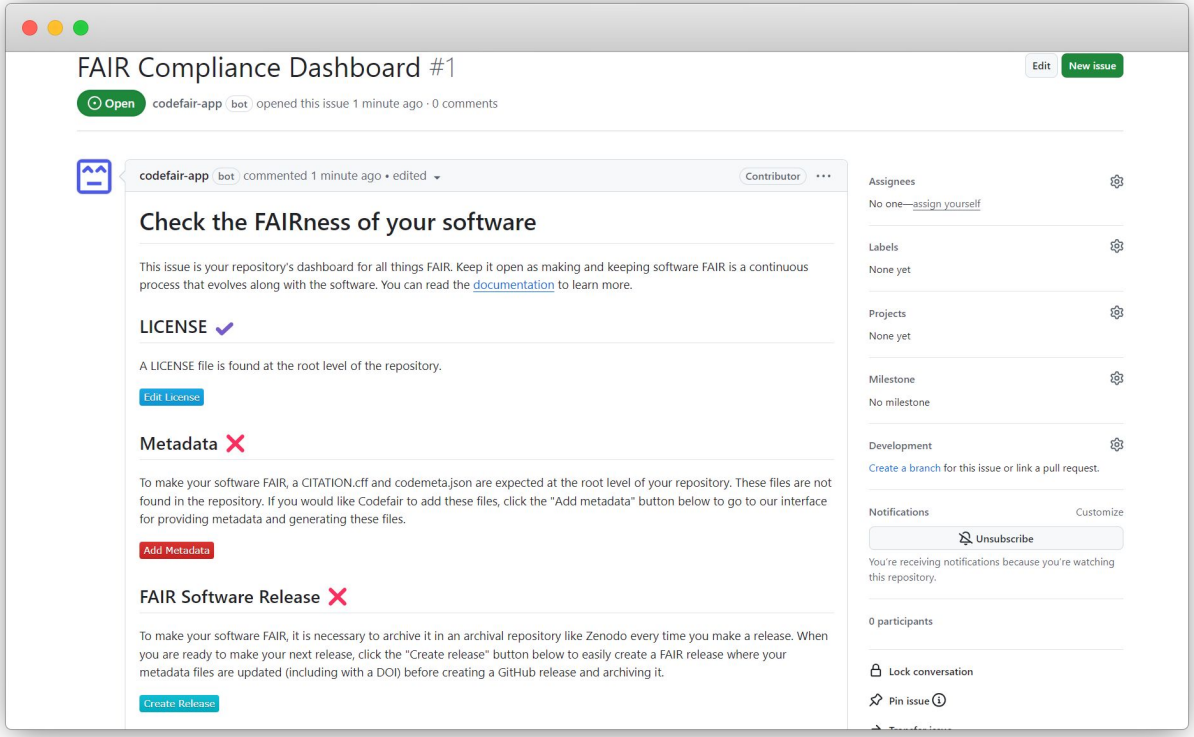
Install codefair on your GitHub repository (codefair.io)

Develop your software as usual from GitHub

Track and address FAIR compliance issues through the GitHub issue

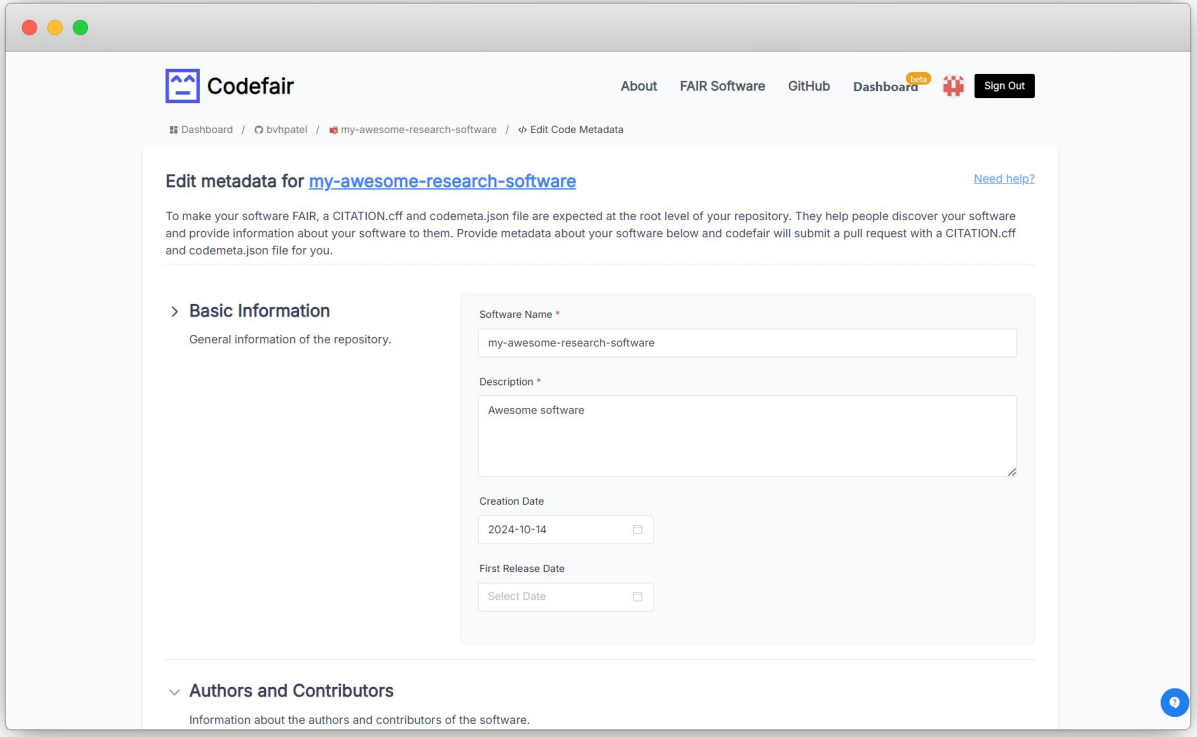
Codefair

GitHub issue dashboard



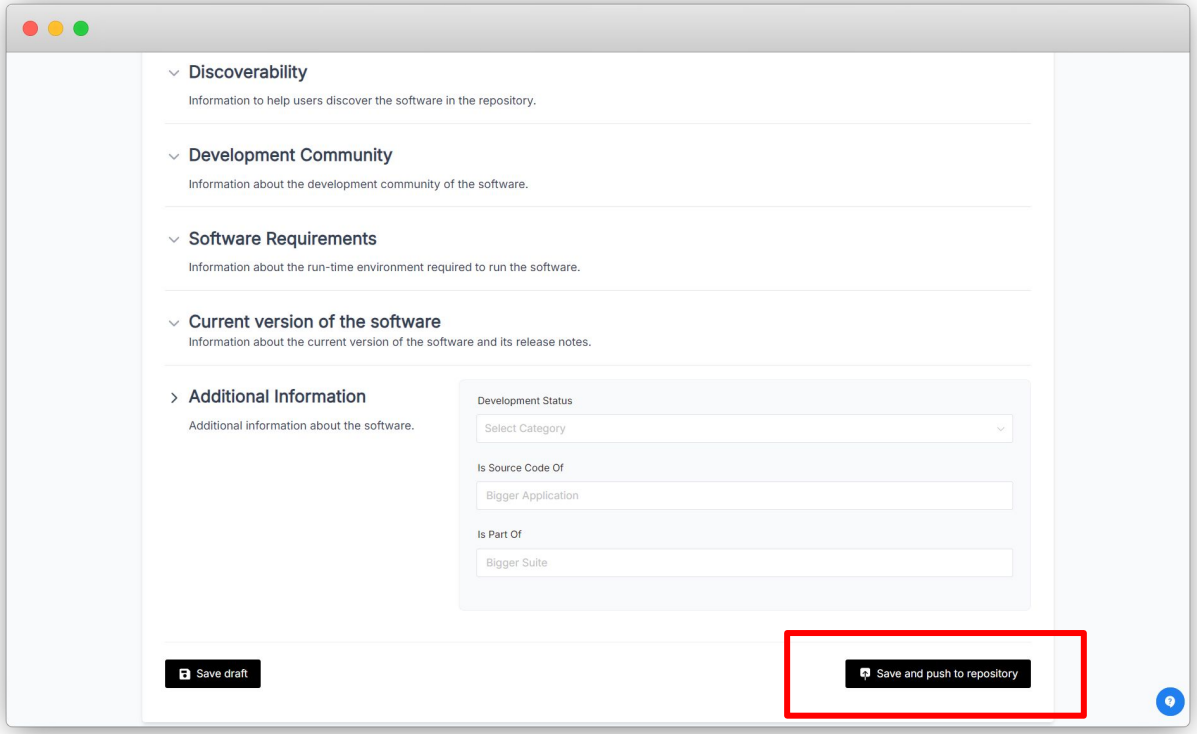
Codefair

Codefair UI



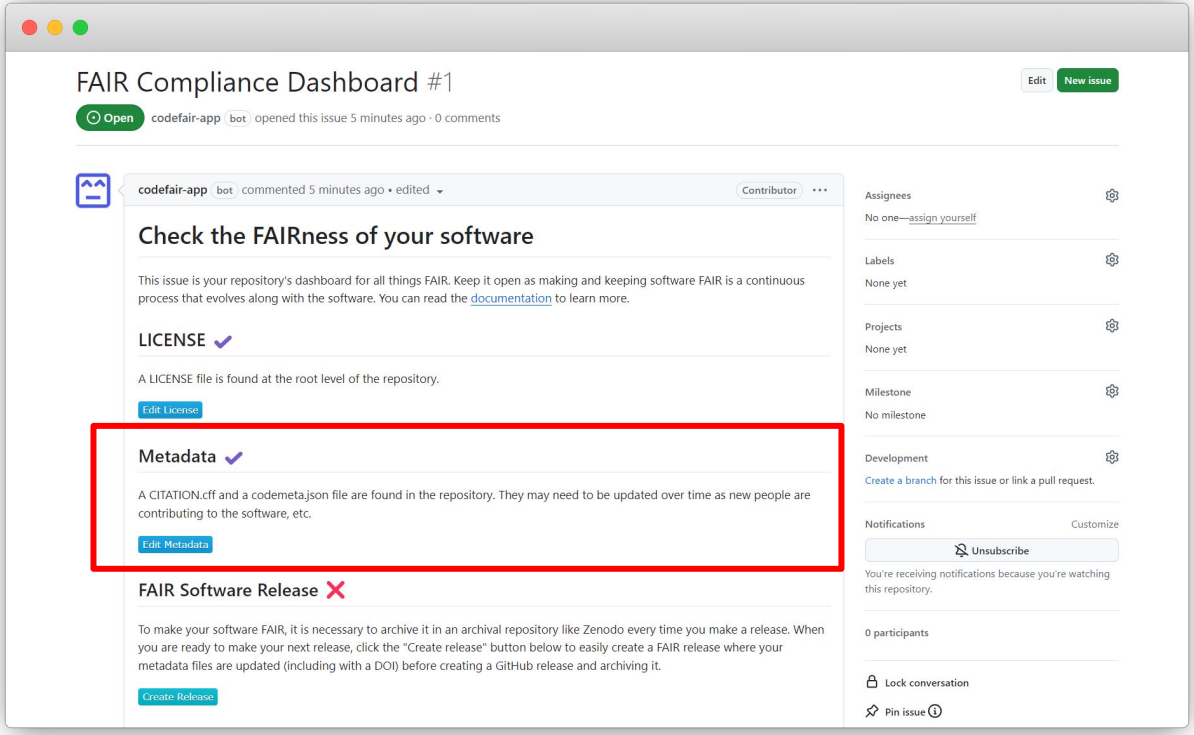
Codefair

Codefair UI



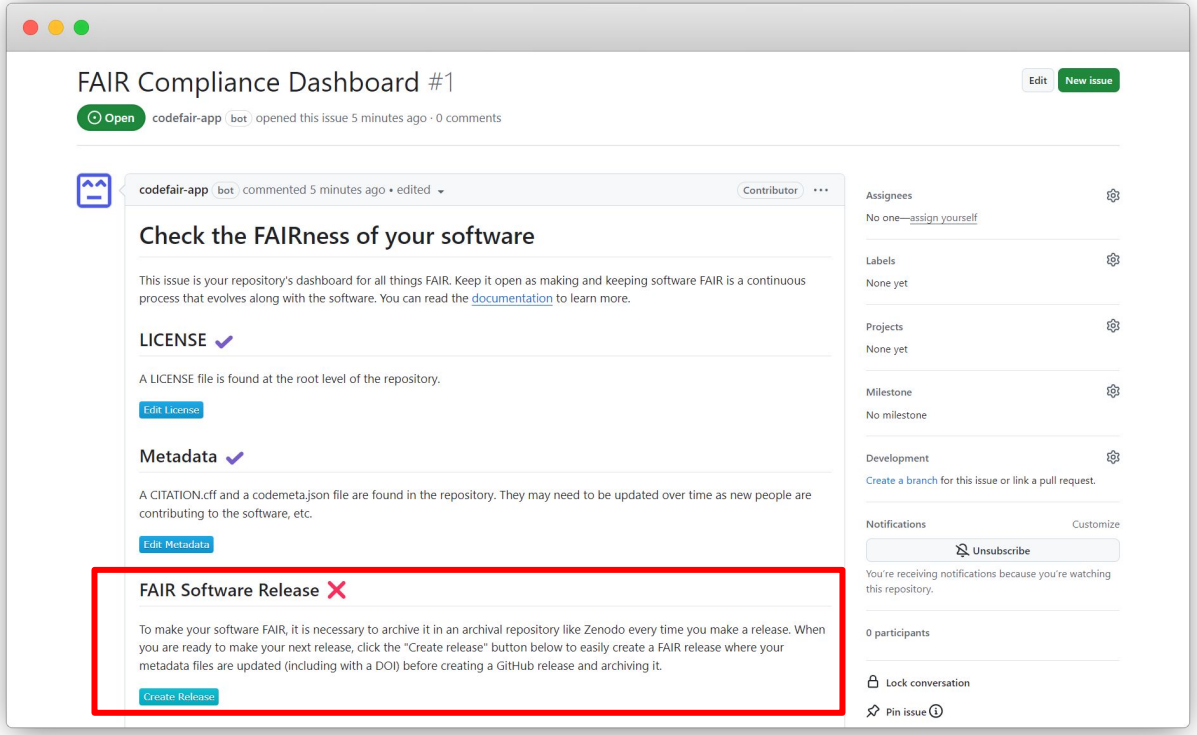
Codefair

GitHub issue dashboard



Codefair

FAIR Software Release



Codefair
Features

- ✅ Add/edit LICENSE file
- ✅ Add/edit codemeta.json and CITATION.CFF metadata files
- ✅ Creating FAIR release via Zenodo
- ✅ Validating CWL files
- ✅ Codefair dashboard

-

Archiving on Figshare, Software Heritage
-

Integration with lintening and other code improvement tools
-

LLM-integration (improve README, metadata, and more)

Codefair

Who should use it?

Anyone developing research software (any field of research)

No knowledge of FAIR software required

No coding required (code-free tool)

Supporting Codefair

Supporting Codefair

Many ways!

Use it

Go to codefair.io

Provide feedback

Suggest features

Contribute

Developer documentation: https://docs.codefair.io/dev/intro.html

Fund it

Any funding opportunities?

Future Work

Future Work

Add more features to make software FAIR

Include features to support researchers beyond just FAIR (software quality, security, etc.)

Lead the FAIR Research Software Guidelines task force: https://www.researchsoft.org/taskforces

Thank You!

codefair.io

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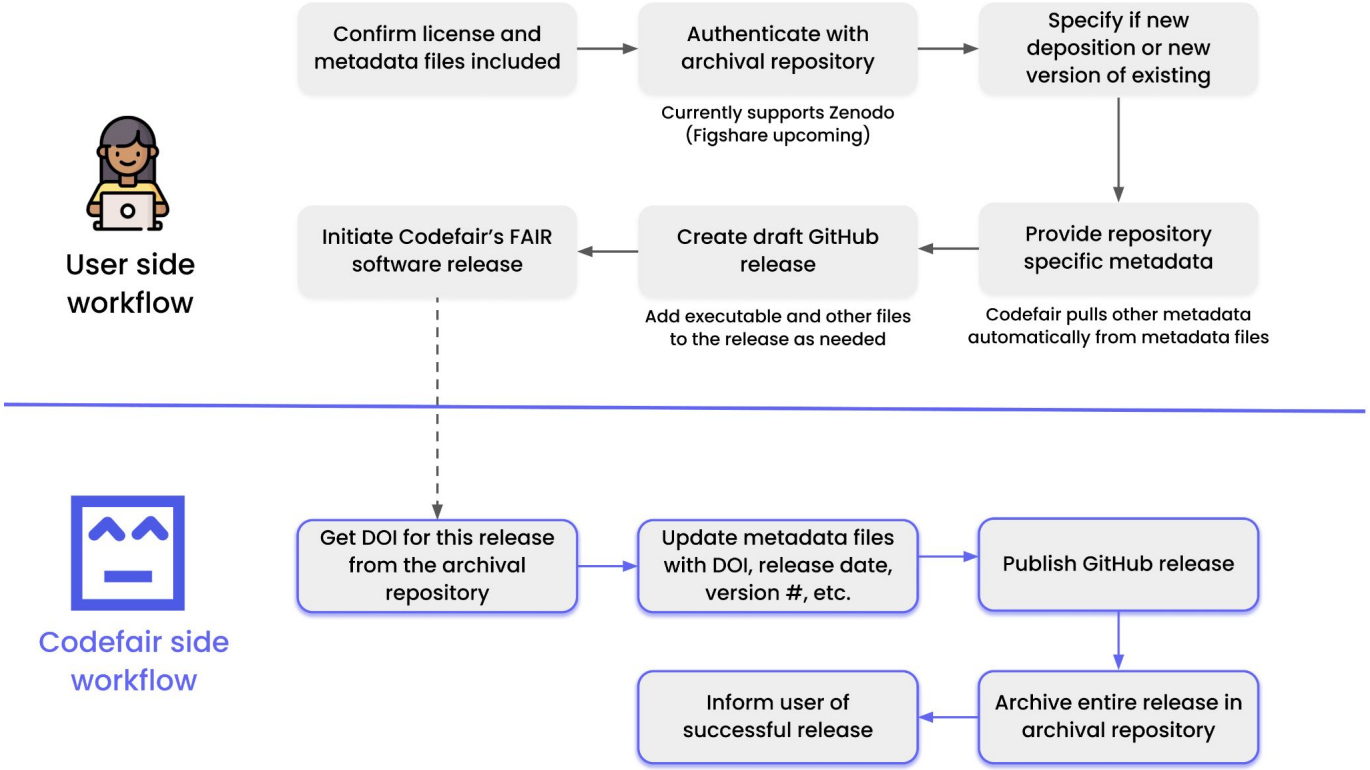
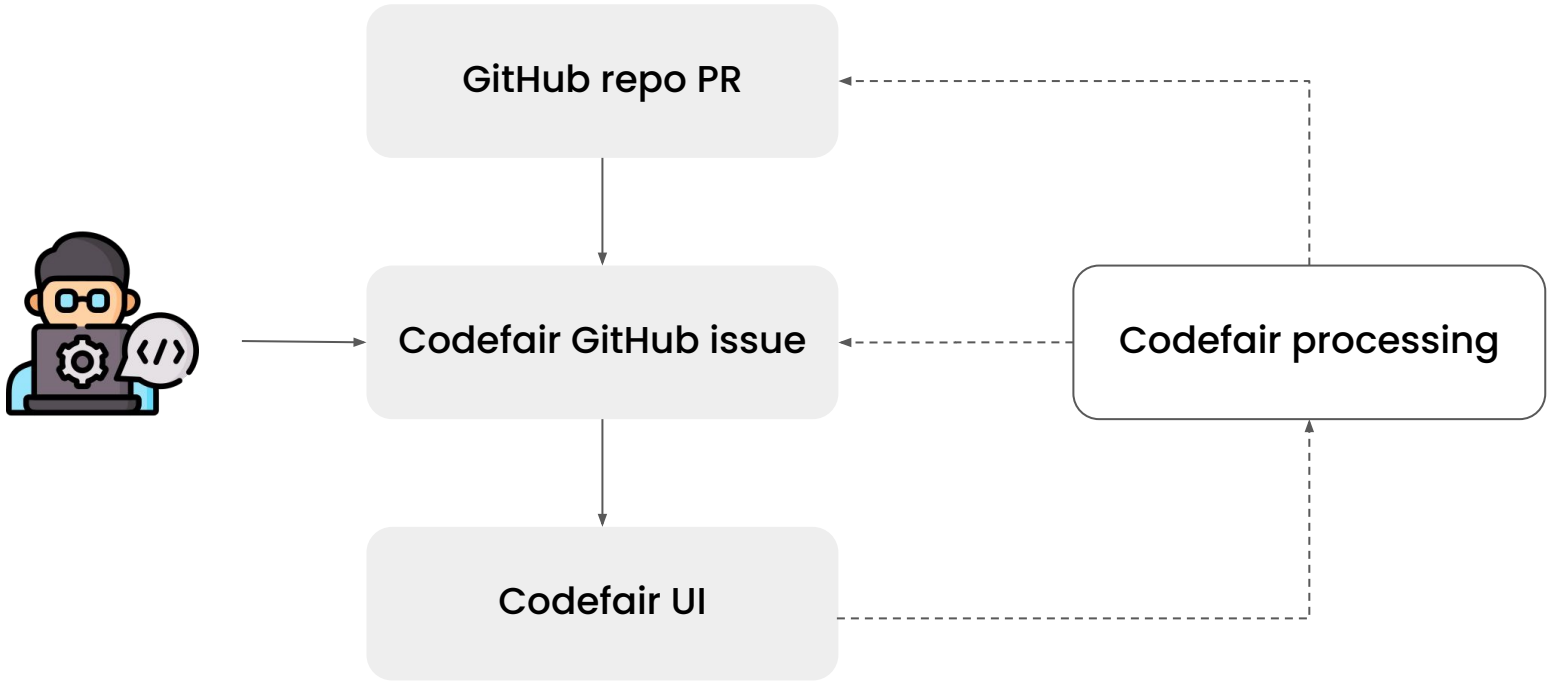
fairdataihub.org

Find these slides and all resources here

bit.ly/codefairUSRSE2024

Codefair

FAIR Software Release



Codefair
Workflow