Navigating Privacy in an Open Science Framework

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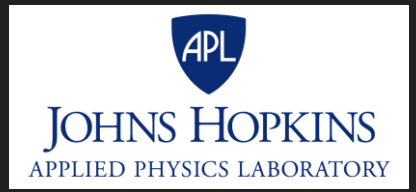

What is Open Science?

Word cloud created using multiple definitions of Open Science:

- UNESCO
- NASA
- NSF
- US White House
- Europe
- Japan
- Africa
- Vietnam

“Making scientific knowledge and collaborations open.”

Open Science for Publications

No data, software or instructions cited or available.

Includes plotted data, plotting scripts, mostly incomplete instructions. No data or software citations.

Partially complete citation list for data and software, missing components, instructions lacking critical pieces.

Complete citation list for all data and software used, mostly complete instructions.

Intermediate datasets included, all analysis scripts included, detailed instructions.

Completely executable in a software environment online!

Image Idea: NASA TOPS, slide 19 of https://doi.org/10.5281/zenodo.5621673

DOI: 10.3389/fspas.2022.977781

Open Science for Publications: Using Modeled Datasets

No data, software or instructions cited or available.

Includes plotted data, plotting scripts, mostly incomplete instructions. No data or software citations.

Partially complete citation list for data and software, missing components, instructions lacking critical pieces.

Problem: Impossible to validate most publications!

What is DIFFICULT? *easy*? critical?

Complete citation list for all data and software used, mostly complete instructions.

Intermediate datasets included, all analysis scripts included, detailed instructions.

Completely executable in a software environment online!

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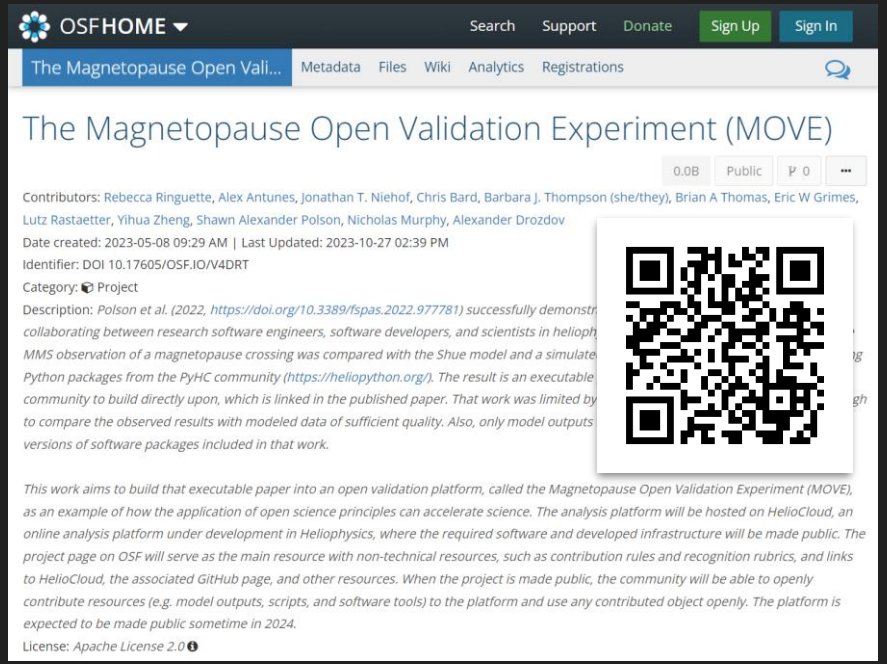
MOVE

- Determine what is difficult, easy, and critical for research to be open.
- Currently exploring how to link technologies together to make open research possible, especially with large datasets.
- Building on previous efforts to further develop guidelines to apply to research.
- Exploring how open research can be done for a spectrum of privacy demands.

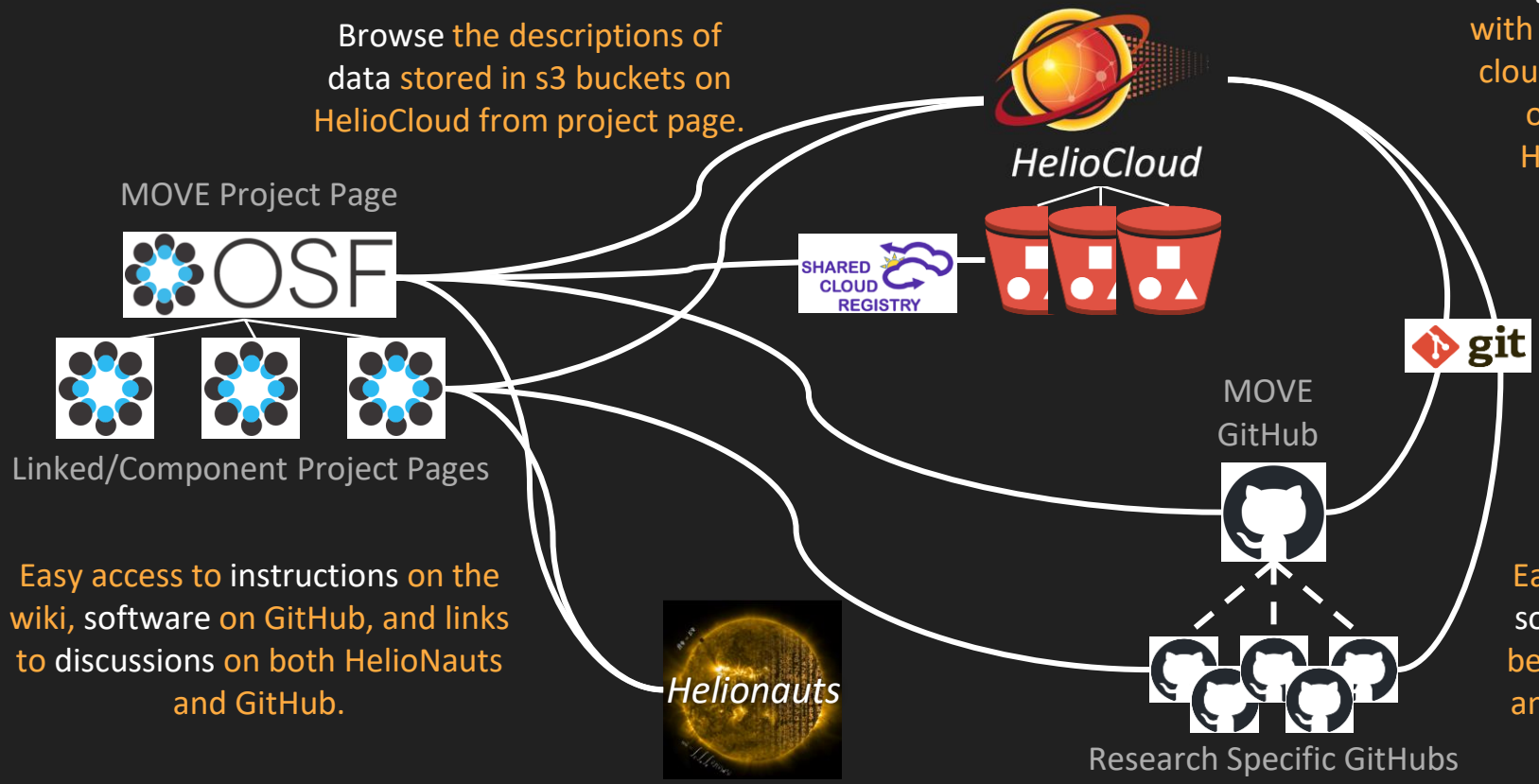


MOVE web page:
osf.io/v4drt/

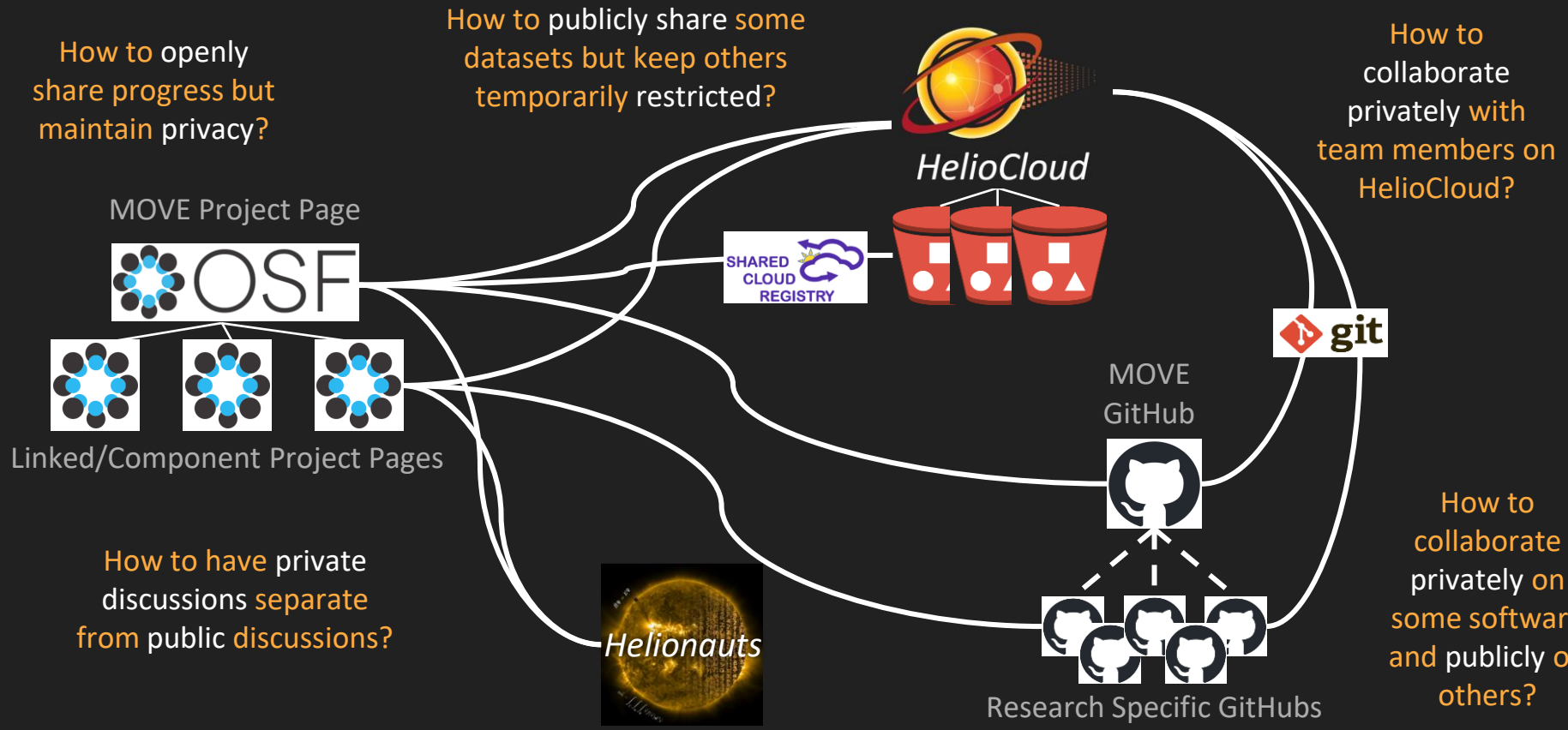
DOI:
10.17605/OSF.IO/V4DRT

Sign-up for Open Science 101

MOVE: Linking Technologies Together



MOVE: Navigating Privacy and Transparency



OSF Privacy Testing

Tested Action	Public Linked/Component Project				Private Linked/Component Project			
	Admin	Write	Read	Public	Admin	Write	Read	Public
View project web page	✓	✓	✓	✓	✓	✓	✓	✗
View project name from MOVE page *requires MOVE write pemissions for private projects if not a contributor	✓	✓	✓	✓	✓	✓	✓	✗
View project wiki	✓	✓	✓	✓	✓	✓	✓	✗
View files linked from **public** Google Drive folder	✓	✓	✓	✓	✓	✓	✓	✗
View files linked from **private** Google Drive folder	✓	✓	✓	✓	✓	✓	✓	✗
View files on project's OSF Storage	✓	✓	✓	✓	✓	✓	✓	✗
Add/Edit/Delete files on project's OSF Storage	✓	✓	✗	✗	✓	✓	✗	✗
View files linked from **public** Github	✓	✓	✓	✓	✓	✓	✓	✗
View files linked from **private** Github	✓	✓	✓	✓	✓	✓	✓	✗
Link/unlink project to/from MOVE *requires write permissions on MOVE	✓	?	✗	✗	✓	?	✗	✗
Create/Delete project components *requires admin (or write?) permissions on project component	✓	?	✗	✗	✓	?	✗	✗
Text search feature works on linked spreadsheet	✓	✓	✓	✓	✓	✓	✓	✗

OSF Privacy Testing

Interesting items:

- Can see files and their contents from a private GitHub when linked to OSF even if not a contributor to the GitHub, but can only go to the GitHub site if allowed.
- MOVE admin can only see private projects if added as a contributor to the project.
- Need write permissions on Google Drive, GitHub, or other linked storage to make edits on those files.

Further testing needed:

- Combinations of permissions required to create/delete project components?

HelioNauts Privacy Testing

HelioNauts Privacy Testing		Parent Category	
		Member	Non-Member
Subcategory	Member	✓	---
	Non-Member	Mixed	✗

Mixed = Can see posts in parent category but not in subcategory

Positives:

- Can use varying view/edit permissions per group of users to provide flexible privacy capabilities.

Drawbacks:

- Must be a member of HelioNauts to see anything (but it is easy to join).

Summary

Sign-up for Open Science 101!

- Need education on how to create research that is transparent and FAIR.
- MOVE compliments the TOPS curriculum by experimenting what is technology needed to support *complex workflows*, *large datasets*, *flexible privacy demands*, and an *open culture* in open research.
- Lessons learned from MOVE will be published openly, possibly added to NASA Open Source Science guidance.
- After MOVE, planning community workshop to create rubrics to judge how transparent a given publication is.

Contact me to get involved!

- Work is in progress to improve privacy on HelioCloud.
- Planning to be open to beta testers next spring, live next summer/fall.

*FAIR = Findable, Accessible, Interoperable, and Reusable. Wilkinson *et al.* (2016). https://doi.org/10.1038/sdata.2016.18

Useful Links

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- MOVE website: https://doi.org/10.17605/OSF.IO/V4DRT
- TOPS Open Science Guidelines: https://github.com/nasa/smd-open-science-guidelines
- Sign up for Open Science 101: https://nasa.github.io/Transform-to-Open-Science/signup/
- Related work on open science for missions: https://doi.org/10.5281/zenodo.8415584

Sign-up for Open Science 101!

MOVE website

Open Science for Missions