Sustainable Open Source Strategy

Alex Harrigan, Amelia Nishimura, Matt St Jean, and Thierry de Crespigny
The original source code of Open Source software is freely available online to be viewed, copied, redistributed, and modified.
Why Open Source in Research?

- Easily Obtainable
- Transparent Workflow
- Streamlines Collaboration
Current State of Research Software

Technical Inexperience

Institutional Practices
Obstacles to Changing Software Practices in Research

Training takes time and money

Publishing good software isn’t rewarded
Searching for a Solution

Our goals for the project were to:

- Assess the IGB staff’s open source experience
- Spread awareness of open source ideas
- Create policy guidelines for the IGB
- Create a set of general suggestions for researchers
The IGB can Benefit from Open Source

Leibniz-Institute of Freshwater Ecology and Inland Fisheries
Project Objectives

- **Evaluate** the challenges and opportunities for open source software practices
- **Identify** the steps that will lead to successful open source software practices
- **Develop** policy guidelines and suggestions for researchers interested in open source
Information Gathering

Two Focus Groups
- IGB Staff
- Digital Humanities Researchers

Conducted Surveys and Interviews
- 42 IGB Survey Responses
- 6 Digital Humanities Responses
- 12 Total Interviews
Software is Integral to Research Staff

Hours per day participants spend using scientific software:
- <2 hours: 19.5%
- 2-4 hours: 31.7%
- 4-6 hours: 41.5%
- 6-8 hours: 41.5%
- 8+ hours: 7.5%

Hours per day participants spent developing software:
- <2 hours: 20.5%
- 2-4 hours: 74.4%
- 4-6 hours: 3.1%
- 8+ hours: 2.0%
Researchers are not Professional Programmers

Level of Participant Software Training

- 46.3% Self-Taught
- 24.4% None
- 14.6% Formal Courses
- 7.3% Self-Taught + Some Training
- 7.3% Training Workshops
There is a Desire to Learn Skills

“Getting into a healthy routine of documenting and commenting scripts would be very useful” (IGB researcher)
“We do share our code on certain applications and change it for slightly different purposes” (IGB Researcher)
There is no Institutional Support for Open Source

“Programming is part of our job, it's not something you get rewards for.” (IGB staff member)
“I think open is, perhaps to a fault, an understood characteristic of Digital Humanities work and anyone not making their materials open looks a little out of place”
Primary Takeaways

Institutional support is necessary for open source publication

Importance of confidence in the code that is created
Administrative Solutions

Policy Brief for IGB Administration

- Revamp the internal bitbucket git server for sharing.
- Host seminars/workshops on software development.
- Open Source Licensing/Journals.
- A LOM System change that gives credit for published software.
Individual Solutions

Flyer for distribution at the IGB

WHY OPEN SOURCE?

You’ve probably heard of open source. But did you know that it can help you improve your code and research overall?

Publishing your code or work open source can:

1. Ensure easy access later if needed (who knows when you may need it!)
2. Enable you to keep track of the program’s development
3. Ensure the reproducibility of your work by making the software you used easy to find. No one likes having to recreate code.
4. Help resolve errors in your work. The open source community are a helpful bunch
5. Make it easy for others to use and build on your work
6. Encourage others to give feedback quickly. Avoid those long wait times
Broader Applications

General Guidelines for all Researchers
Questions?


Credits and Sources

Presentation template by SlidesCarnival
https://www.jstor.org/stable/41703471
https://science.sciencemag.org/content/340/6134/814
https://dl.acm.org/doi/10.1145/1882373 (technical debt) - could not find, cite acm in general
https://www.techrepublic.com/article/open-source-hardware-the-problems-and-promise/ (open hardware)
https://www.nature.com/articles/nature10836 (Software Sharing for Research)
https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=881708 (Software reproducibility)
https://www.jstor.org/stable/90009690 (Journal Paywalls)
https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5069155
https://journals.sagepub.com/doi/10.1177/0022242918815163
https://academic.oup.com/spp/article/43/2/192/2414129
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0127502