

Journal of Open Source Software: Developing a Software Review Community

Computational Infrastructure for Geodynamics virtual developer meeting, 28 Feb 2022

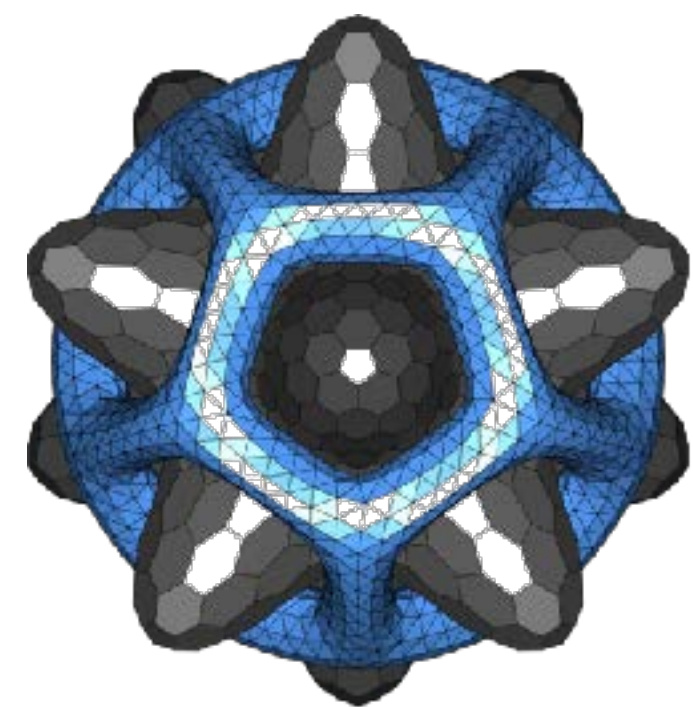
Gabriela Alessio Robles, Mikkel Meyer Andersen, Katy Barnhart, Juanjo Bazán, Sebastian Benthall, Eloisa Bentivegna, Monica Bobra, Frederick Boehm, Jed Brown, Pierre de Buyl, Patrick Diehl, Elizabeth DuPre, Vissarion Fisikopoulos, Martin Fleischmann, Dan Foreman-Mackey, Jarvis Moore Frost, Nikoleta Glynatsi, Jeff Gostick, Richard Gowers, Hugo Gruson, Olivia Guest, David Hagan, Jayaram Harihan, Chris Hartgerink, Bitá Hasheminezhad, Christina Hedges, Luiz Irber, Mark A. Jensen, Prashant K. Jha, **Daniel S. Katz***, Vincent Knight, Rachel Kurchin, Hugo Ledoux, Christopher R. Madan, Brian McFee, Melissa Weber Mendonça, Kevin M. Moerman, Kyle Niemeyer, Juan Nunez-Iglesias, Lorena Pantano, Stefan Pfenninger, Viviane Pons, Kristina Riemer, Amy Roberts, Marie E. Rognes, Ariel Rokem, Will Rowe, Kelly Rowland, David P. Sanders, Mehmet Hakan Satman, Fabian Scheipl, Jacob Schrieber, Adi Singh, **Arfon Smith****, Charlotte Soneson, Øystein Sørensen, Andrew Stewart, Fabian-Robert Stöter, Yuan Tang, George K. Thiruvathukal, Kristen Thyng, Tim Tröndle, Leonardo Uieda, Chris Vernon, Marcos Vital, Lucy Whalley, Bruce E. Wilson, Frauke Wiese

*presenter **some slides

<https://joss.theoj.org>



<https://doi.org/10.5281/zenodo.6305241>



Software isn't a creditable
research activity

***How to better
recognize
software
contributions?***

- 1.** Find some way to fit software into current (paper/book-centric) system
- 2.** Evolve beyond one-dimensional credit model

*What if we just wrote
papers about software?*

Software papers

Gives us something easy to cite 👍

No changes required to existing infrastructure 🙌

Publishing in existing journals raises profile of software within a community 🙌

Software papers

Writing another paper can be a ton of work 😅

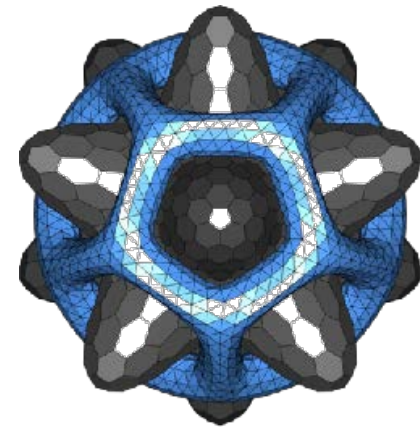
Many journals don't accept software papers 😡

For long-lived software packages, static authorship presents major issues 😞

Many papers about the same software may lead to citation dilution 🦊

What if we made it as easy as possible to write and publish a software paper?

Embracing the hack



The Journal of Open Source Software

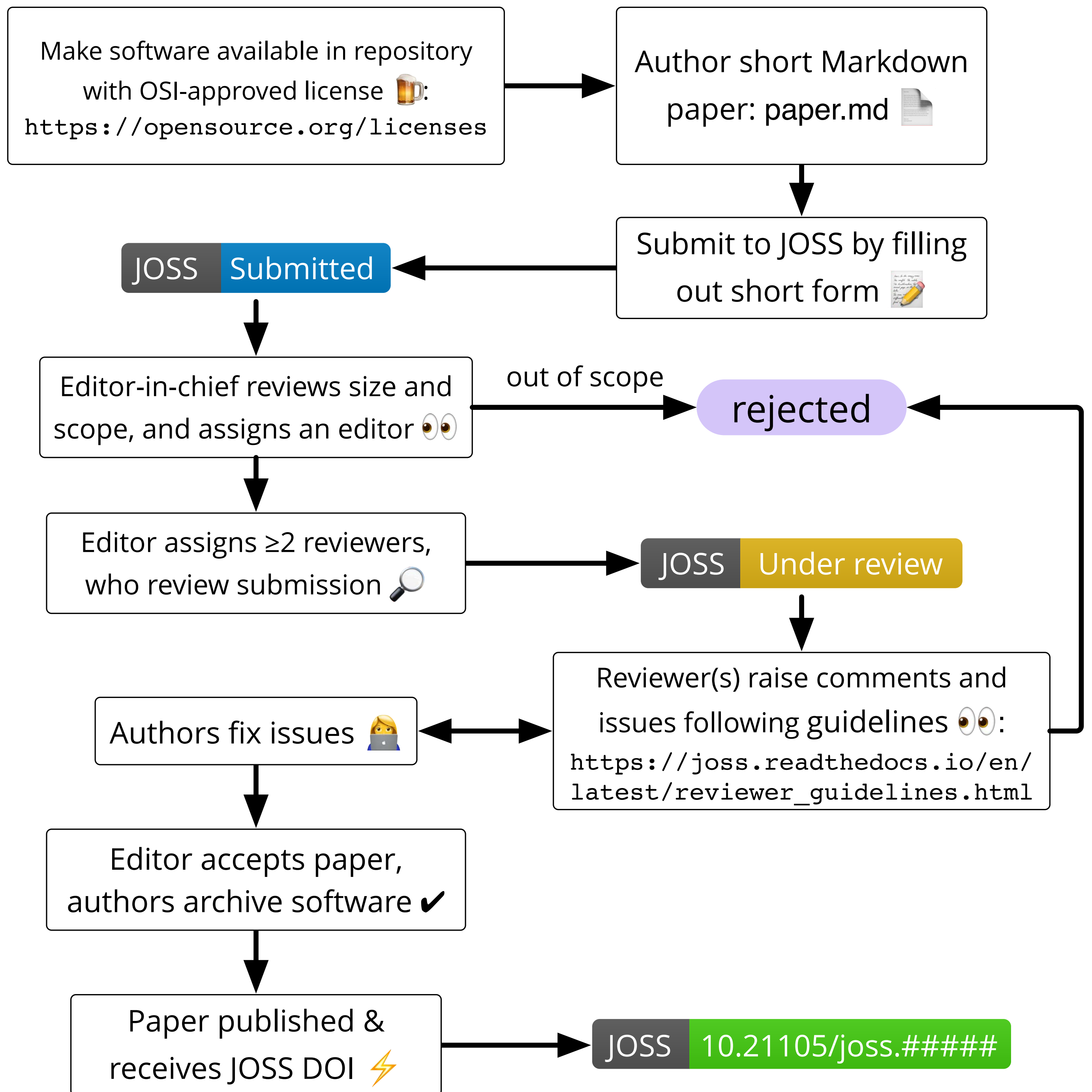
*A **developer friendly** journal** for research software packages

Paper preparation (and submission) for well-documented software should take **no more than an hour**

The primary purpose of a JOSS paper is to **enable citation credit** to be given to authors of research software

* Other venues exist for publishing papers about software

JOSS Process



JOSS Review Checklist

- ✓ Agree to Conflict of Interest & Code of Conduct
- ✓ General checks: repository URL, license, contribution and authorship
- ✓ Functionality: installation, functional claims, performance
- ✓ Documentation: statement of need, installation instructions, example usage, functionality documentation, automated tests, community guidelines
- ✓ Software paper: summary, statement of need, state of the field, quality of writing, references

JOSS Review Checklist Details

Definition of each check in JOSS documentation:

https://joss.readthedocs.io/en/latest/review_criteria.html

Editor helps reviewer and author come to agreement, and some criteria have guidance

- Installation
- API documentation
- Community guidelines
- Automated testing

JOSS Review Checklist Details: Installation

- Good: The software is simple to install, and follows established distribution and dependency management approaches for the language being used
- OK: A list of dependencies to install, together with some kind of script to handle their installation (e.g., a Makefile)
- Bad (not acceptable): Dependencies are unclear, and/or installation process lacks automation

***JOSS
Review
Checklist
Details:
API
Documentation***

- Good: All functions/methods are documented including example inputs and outputs
- OK: Core API functionality is documented
- Bad (not acceptable): API is undocumented

JOSS Review Checklist Details: Automated Tests

- Good: An automated test suite hooked up to continuous integration (GitHub Actions, Circle CI, or similar)
- OK: Documented manual steps that can be followed to objectively check the expected functionality of the software (e.g., a sample input file to assert behavior)
- Bad (not acceptable): No way for you, the reviewer, to objectively assess whether the software works

JOSS as a Community

Cultures change based on rules and incentives

JOSS practices have influenced reviewers and developers in terms of what's good and what's minimally acceptable

Similar to rOpenSci's influence in the R community

JOSS provides rules, and at a high-level, tries to nudge incentives

Accepted software = accepted paper

If software was cited directly, JOSS papers wouldn't be needed, but JOSS reviews and JOSS community would still have great value

Our bot: @editorialbot

Interacts with authors, reviewers, and editors in review 'issues' on GitHub

Compiles papers (Pandoc)

Conducts automated 'healthchecks' for incoming submissions (e.g. license checks, search for missing DOIs)

Sends automated reminders

Deposits metadata and registers DOIs with Crossref

AEiC asks editorialbot to do a 'dry run' of accepting paper

editorialbot produces final proofs of paper and Crossref metadata



Pandoc



arfon commented 5 hours ago
@editorialbot recommend-accept

editorialbot commented 5 hours ago
Attempting dry run of processing paper acceptance...

editorialbot commented 5 hours ago
👏 @openjournals/joss-eics, this paper is ready to be accepted and published.
Check final proof 📄 [openjournals/joss-papers#2993](#)
If the paper PDF and the deposit XML files look good in [openjournals/joss-papers#2993](#), then you can now move forward with accepting the submission by compiling again with the command `@editorialbot accept`

arfon commented 5 hours ago
@editorialbot accept

editorialbot commented 5 hours ago
Doing it live! Attempting automated processing of paper acceptance...

editorialbot added **accepted** **published** labels 5 hours ago

editorialbot commented 5 hours ago
🔴🔴🔴 THIS IS NOT A DRILL, YOU HAVE JUST ACCEPTED A PAPER INTO JOSS! 🔴🔴🔴
Here's what you must now do:

Some observations

It seems to be working (i.e. we're meeting a demand that exists)...

People enjoy editing, reviewing, and being reviewed at JOSS



Thomas J. Leeper

@thosjleeper

Follow



One of the things I really enjoy about editing for [@JOSS_TheOJ](#) is that because the editorial process is all on GitHub, I can do most of the work on my phone while commuting.

7:19 PM - 21 May 2018

2 Retweets 12 Likes



Year 1: 110 (9.2 papers/month)

Year 2: 184 (15.3 papers/month)

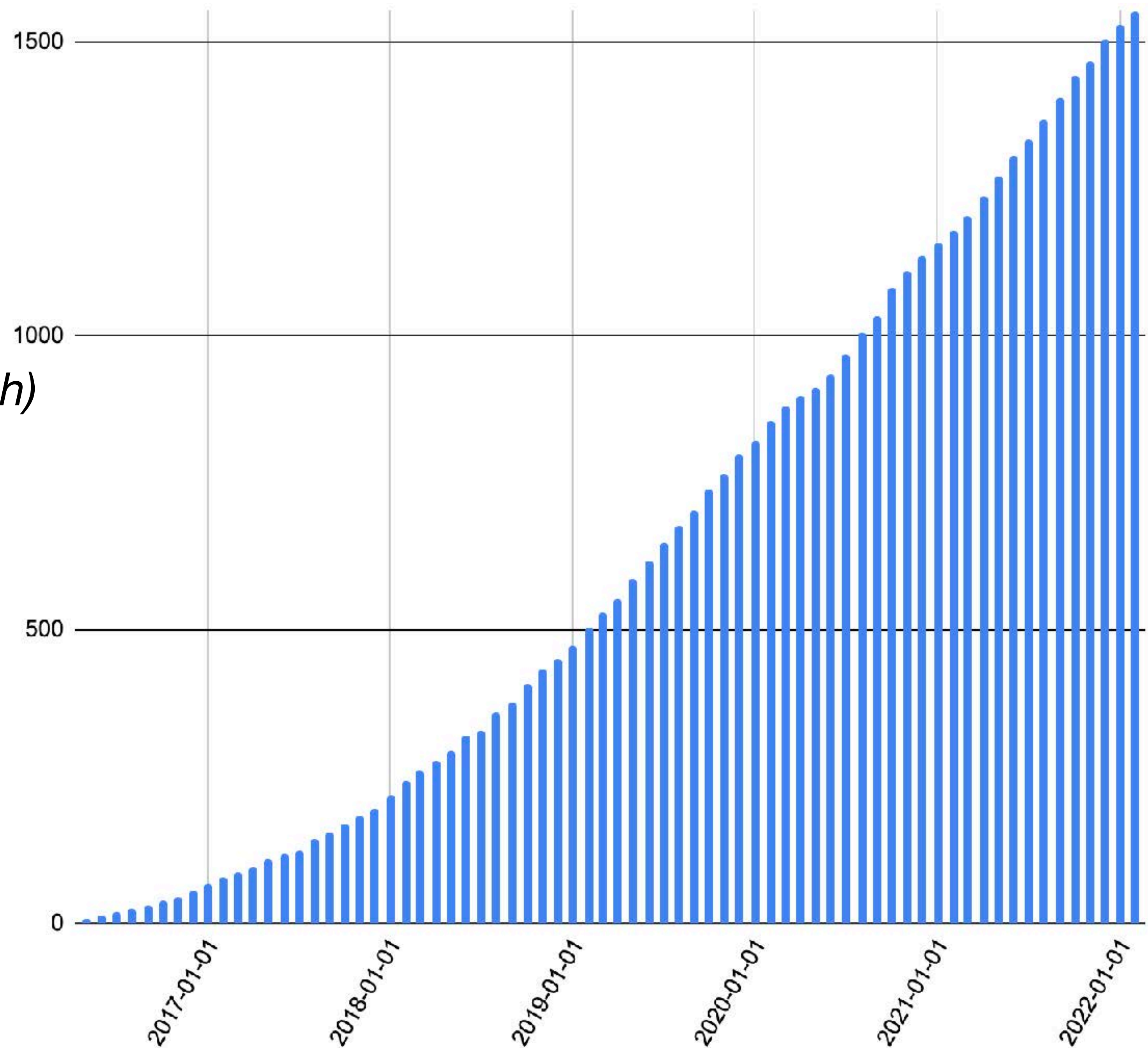
Year 3: 291 (24.3 papers/month)

Year 4: 325* (27.1 papers/month)

Year 5: 362 (30.2 papers/month)

Year 6 (partial): 280 (31.1 papers/month)

**** Includes 2-month pause in submissions due to COVID-19, start of more rigorous scholarly contribution enforcement***



JOSS is a collaboration
between author, editor and
reviewer

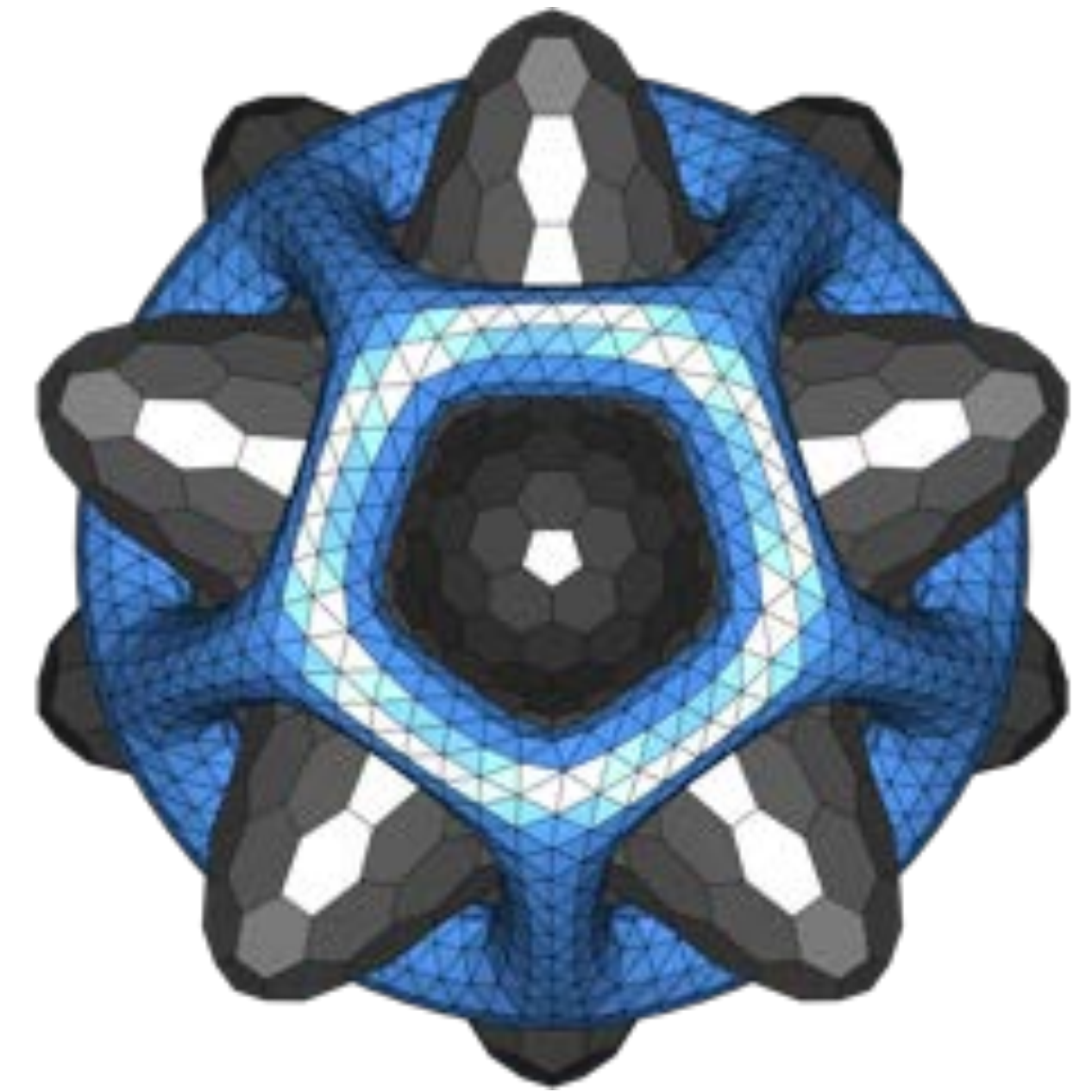
Guest Post — The Evolving Role of Scientific Editing
<https://scholarlykitchen.sspnet.org/2021/09/23/guest-post-the-evolving-role-of-scientific-editing/>

<https://joss.theoj.org>

Thanks!

 @danielskatz

d.katz@ieee.org



GORDON AND BETTY
MOORE
FOUNDATION



Alfred P. Sloan
FOUNDATION

NUMFOCUS
OPEN CODE = BETTER SCIENCE



More details

JOSS Scope and Rejections

We rejected papers that were out of scope (not research software) from the start

From 2020 we enforced our substantial scholarly contribution criteria much more rigorously

- Now rejecting about 25% of submissions before review for scope
- Plus another 2-3% during review

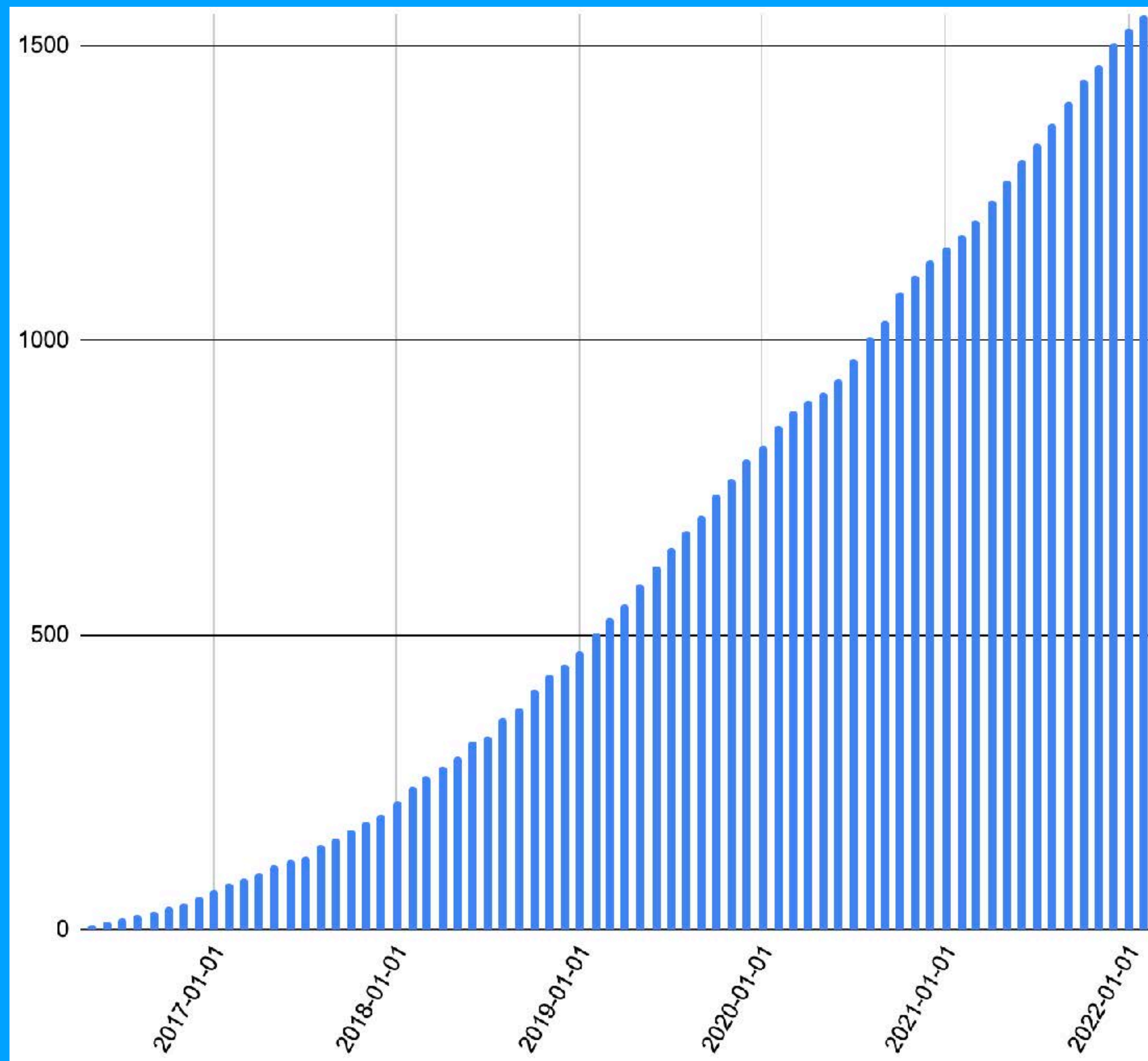
Balancing peer-review & credit for authors

and

academic trust in JOSS papers being equal to peer-reviewed journal papers

<https://blog.joss.theoj.org/2020/07/minimum-publishable-unit>

Scaling JOSS



Most of our challenges are about scaling people processes:

- AEiC/managing editor rotations
- More editors
- Term limits for editors (to avoid burnout)

Technology improvements:

- Smarter reviewer assignments
- Better monitoring tools for editors
- Tools to help authors prepare their submissions

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Lee J. O'Riordan
@mixd



For each of the (few) times I have participated in the review stages of a [@JOSS_TheOJ](#) paper I am incredibly impressed by the fluidity of the process. It is a great model for how other journals could (and should aim to) operate.

8:06 PM · Oct 16, 2018 · [Twitter Web Client](#)

7 Retweets 15 Likes

Some observations

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Louis Moresi

@LouisMoresi

Follow



The process at [@JOSS_TheOJ](#) is very different: a very intense and interactive review that was more thorough than a conventional send-it-in-and-wait-for-ages journal. Like giving a seminar and answering questions (and then giving the talk again & again & again ... until it's right)

3:28 PM - 17 Jun 2019

1 Retweet 2 Likes



Some observations

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Jonathan Reardon
@waterlego



I have to say, I've really enjoyed reviewing for The Journal of Open Source Software ([@JOSS_TheOJ](#)) so far, what a top-tier review process -- transparent, clear, supportive, and inspirational -- and all done on [@github](#). A brilliant place to submit your research software imho 👍

1:14 PM · Jul 6, 2019 · [Twitter Web Client](#)

18 Retweets **48** Likes

Some observations

It seems to be working (i.e. we're meeting a demand that exists)...

People enjoy editing, reviewing, and being reviewed at JOSS



Vince Knight
@drvinceknight



Reviewing for [@JOSS_TheOJ](#) and [#JOSE_theOJ](#) (of the Open Journals: github.com/openjournals) is an exercise in restoration of faith in the "scientific process".

Both times it has felt like I'm doing something worthwhile through a collaborative conversation with the author. 👍



Lorena Barba @LorenaABarba · Jun 21, 2018

Huge thanks to the reviewers, @drvinceknight and @RossDynamicsLab, for

Some observations

People like the robot*...



whedon commented on Aug 28, 2018

Author

Member



Attempting PDF compilation. Reticulating splines etc...



whedon commented on Aug 28, 2018

Author

Member



--> Check article proof  <--



goldingn commented on Aug 28, 2018



Wow, thanks @whedon! I for one welcome ... etc.

* Does cause occasional confusion

Some observations

People like the robot*...



njtierney commented on Aug 8, 2017



Thanks @whedon !



vsoch commented on Jun 20, 2018



Woohoo, robot party! Thanks @whedon @arfon @iljah and @rougier !



2



2



gnarayan commented on May 12



A very different way of doing reviews, and I really love the use of whedon to manage the process.
Thanks for asking me to do this, @arfon!



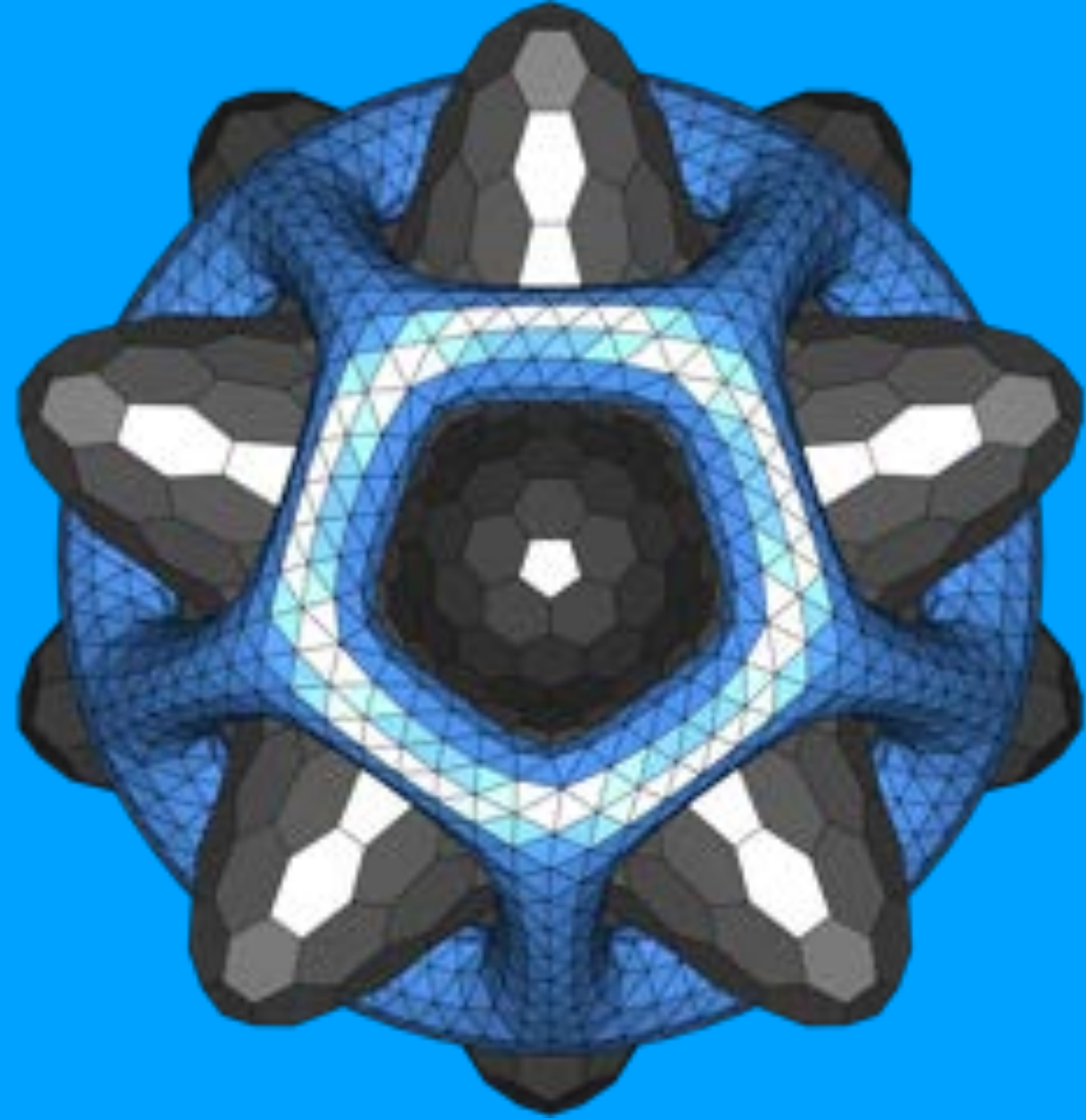
cboettig commented on Sep 25, 2018



sweet, thanks @arfon and @whedon bot!

* Does cause occasional confusion

JOSS Costs



JOSS ***depends*** on volunteers

Actual costs we pay:

- Annual Crossref membership: \$275/year
- JOSS paper DOIs: \$1/accepted paper
- JOSS website hosting: \$19/month
- JOSS domain name registration: \$10/year

\$2/paper, at 500 papers/year

Doesn't include \$50k infrastructure development paid by Sloan grant, GitHub usage, user donations, AAS fees

<https://blog.joss.theoj.org/2019/06/cost-models-for-running-an-online-open-journal>

JOSS *Collaborations*

When AAS articles include new software, authors can jointly submit

- Science paper to AAS
- Software paper to JOSS

Reviews done in parallel; published papers cite/linked via DOIs; AAS pays JOSS \$50/paper

JOSS infrastructure also used by Journal of Open Source Education (JOSE), JuliaCon Proceedings (& open to more)

<https://blog.joss.theoj.org/2018/12/a-new-collaboration-with-aas-publishing>

***Unexpected
consequences
of working
openly***

Semi-regular emails from people annoyed they haven't been asked to review yet

Generally need relatively small number of invites to identify reviewers (~2 invites per reviewer)

Vanity software package 'pile-on' - for high-profile open source projects, often have many reviewers volunteering

Some awesome things about working openly

Zero privileged information in the system:
Reviewer reports, editorial decisions available to all

Increase transparency:

- Public declarations of potential conflicts
- Editorial decisions documented in the open
- Clear expectations of authors

Reduces complexity of infrastructure

People can link to their reviews

***Some
not-so-awesome
things about
working openly***

Zero privileged information in the system: So sometimes authors chase reviewers, editors etc.

Good reviewers become well known quickly potentially leading to reviewer burnout

Potential cultural barriers to entry for some and negative dynamics for junior staff