

Power Dynamics, Rug Pulls, and Other Corporate Impacts on OSS Sustainability

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Proprietary SW Disclaimer: MacOS and Keynote used to create this presentation

All data gathered using Python and Jupyter Notebooks (OSS) from the GitHub GraphQL API & LinkedIn (proprietary)

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Thank You!



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Whoami



- Geek, traveler, reader
- 20+ yr tech career focused on community & open source (VMware, Intel, Puppet, ...)
- OpenUK Board
- CHAOSS Board and Maintainer
- CNCF TAG Contrib Strategy co-chair
- PhD on Linux kernel collaboration

Photos by Mom, the Linux Foundation, and me

Agenda

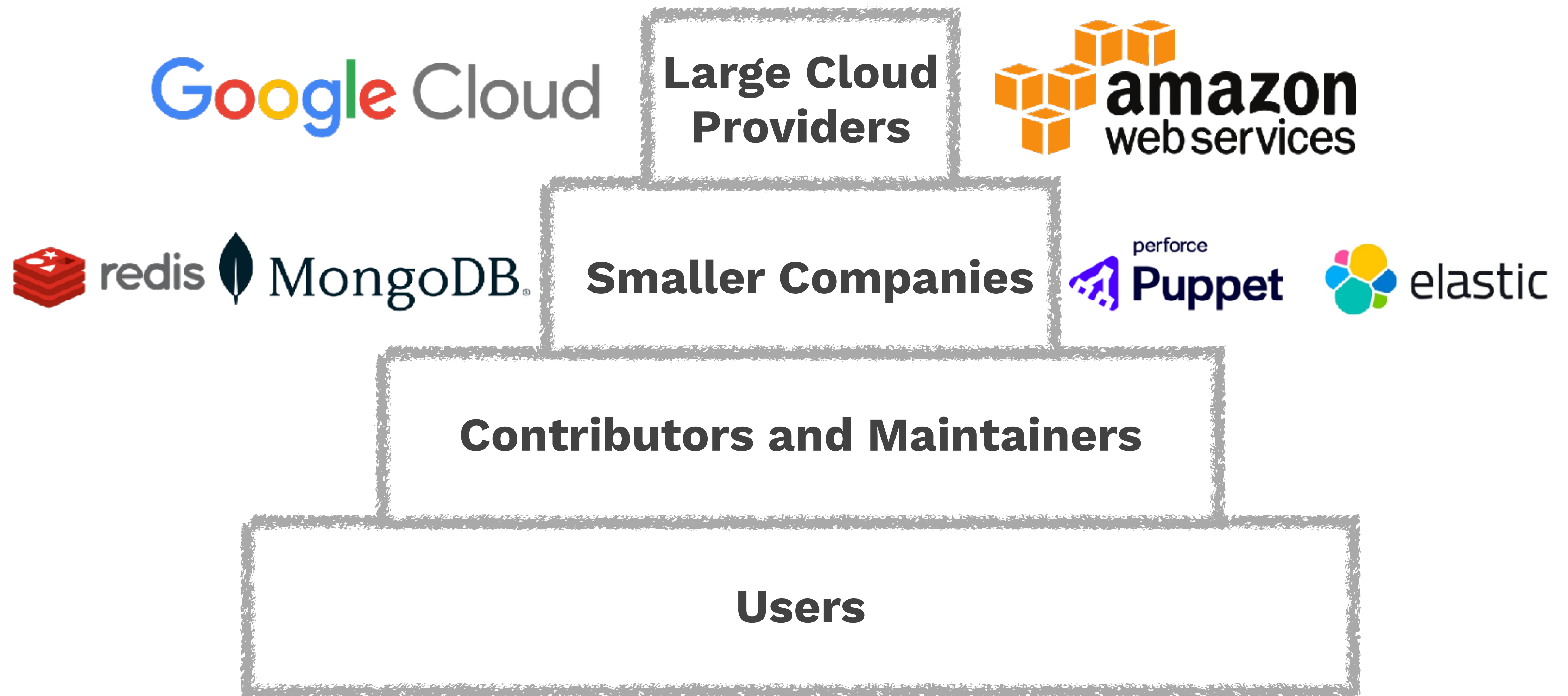
- Power Dynamics
- Rug Pulls
- Relicensing -> Forks Data
- What Can We Do?

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The Feudal Society in Medieval Europe



Open Source Power Dynamics



Rug Pulls and Disruption

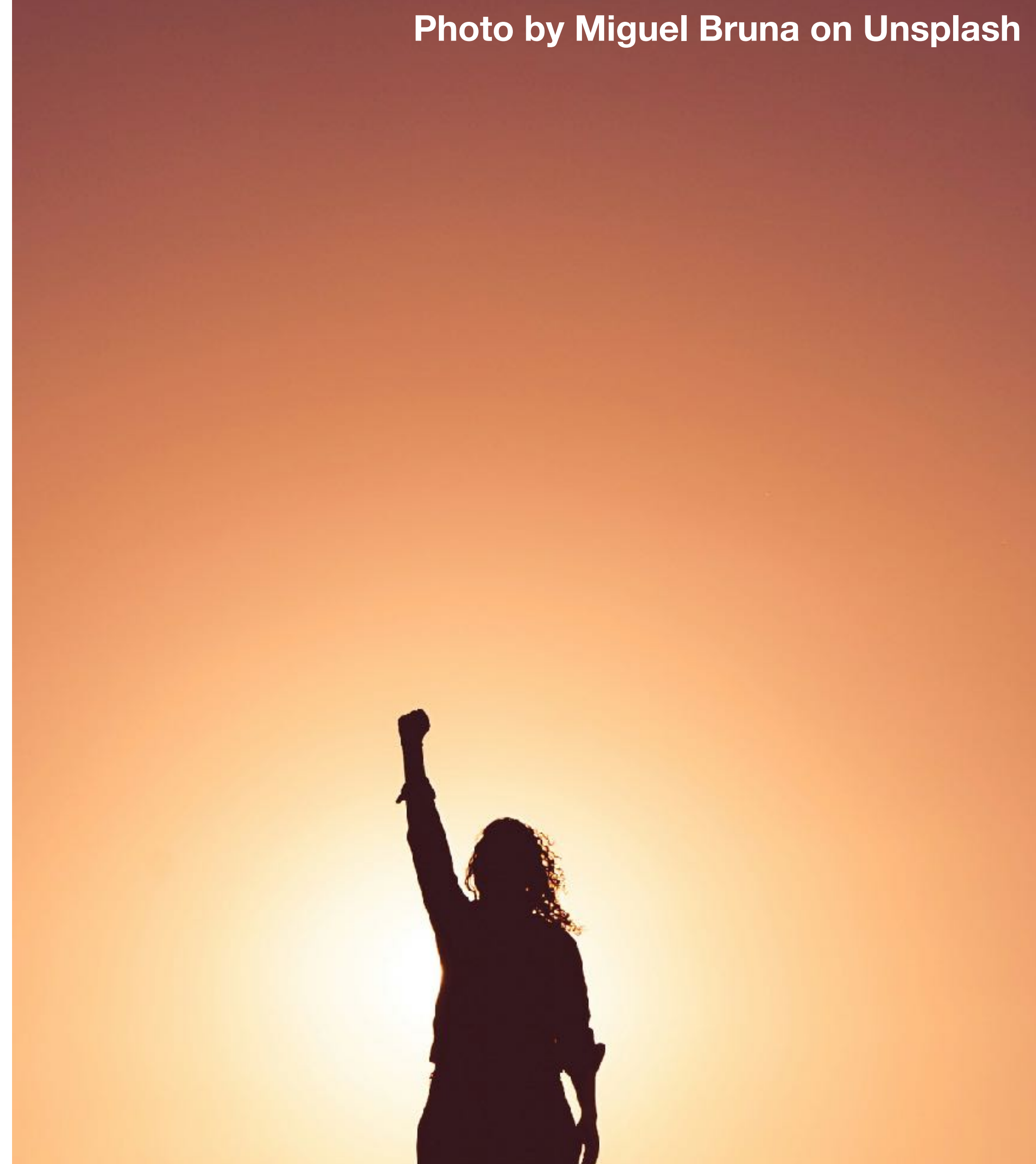
Companies with more power
can pull the rug from
underneath the rest of us
resulting in disruptions



Photo by Jan Fidler - CC BY 2.0


Relicensing: Flip the Power Dynamic

Cloud providers often cited as cause for relicense, which puts more power in the hands of the smaller company



Rug Pulls -> Forks

Social fork: forking a project to collaborate and contribute back to it (GitHub fork)

 **Hard fork (aka hostile fork):**
starts a new project that often
competes with the original



Forks Flip the Power Dynamic

Forks are a form of collective action where those with less power can take control of the governance of a project via a fork

(Mindel et al., 2018)



Photo by Alex G on Unsplash

Rug Pulls: Relicensing, Forks, and More

Relicensing Rug Pulls & Forks

Elastic Relicense → OpenSearch Fork

- 2021-02-03: Elastic relicenses to SSPL & Elastic
- 2021-04-12: OpenSearch fork owned by AWS

Terraform Relicense → OpenTofu Fork

- 2023-08-10: Terraform relicenses to BSL
- 2023-09-05: OpenTofu launched as fork under the LF

Redis Relicense → Valkey Fork

- 2024-03-20: Redis relicenses to SSPL & RSAL
- 2024-03-28: Valkey fork launched as an LF project



Photo by Alex G on Unsplash

Relicensing Rug Pulls without Forks

Relicensing events don't
always result in a popular fork.

Examples: MongoDB, Sentry



Other Rug Pulls

Perforce doesn't "relicense"
Puppet, but they move the
development and releases
to behind closed doors,
which resulted in the
OpenVox fork



Impacts and Data



About the Data (Contributions Welcome!)

Current Focus:

- Organizations / Employers (challenging to gather)

Commits / Lines of Code:

- Used for thresholds

Additions / Deletions:

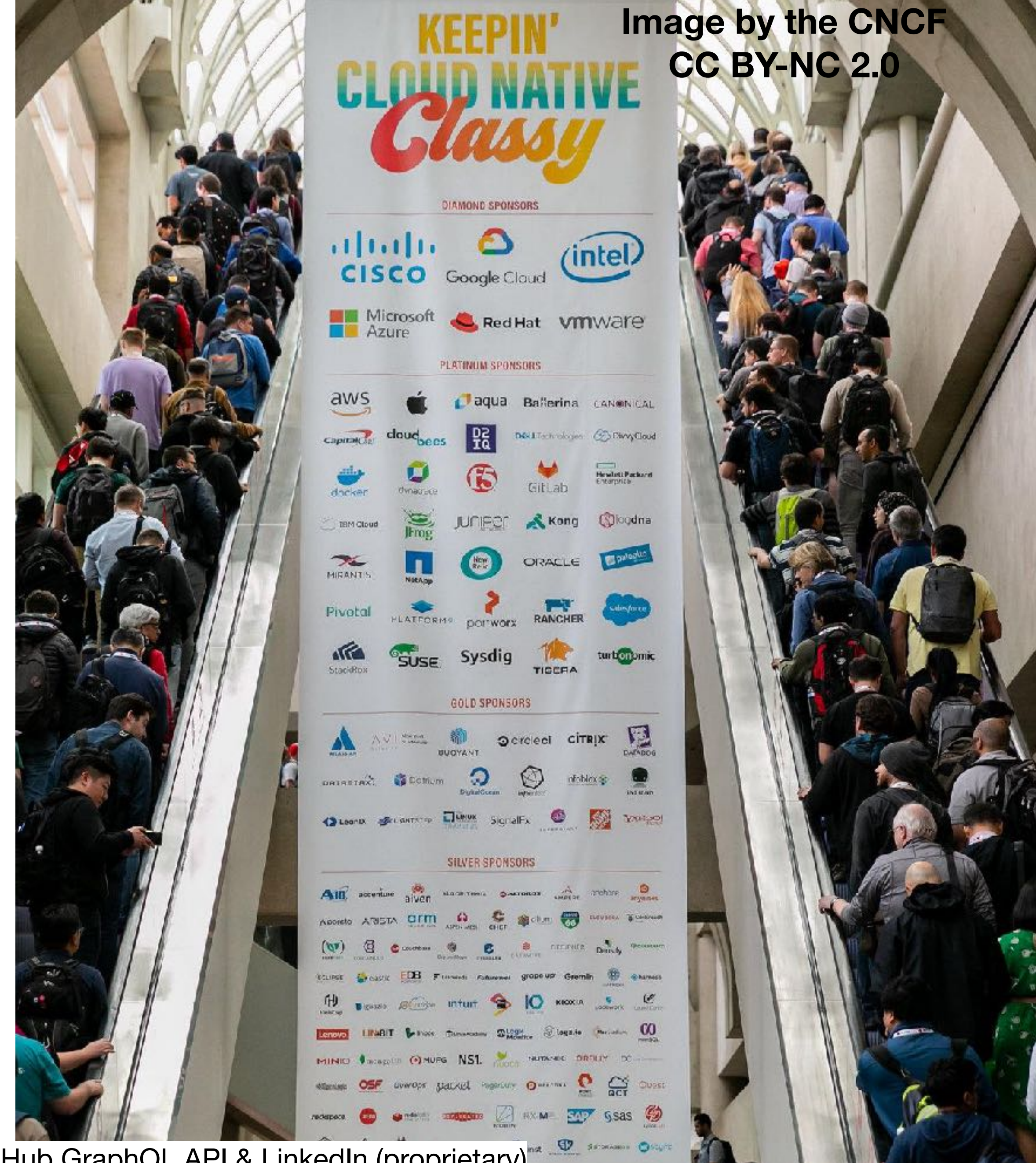
- Lines of code for magnitude

GitHub Stars / Forks:

- Proxy for usage (not a measure of health)

Next:

- Additional community health measurements



Relicensing: Users Drove Fork

Contributions from vendor employees.

Fork created by new contributors and
owned by a company.



elasticsearch

Key Dates:

- 2021-02-03: Elastic relicenses to SSPL & Elastic
- 2021-04-12: OpenSearch fork owned by AWS
- 2024-08-29: Elastic adds AGPL
- 2024-09-16: OpenSearch moves under LF



Elasticsearch repo (<https://github.com/elastic/elasticsearch>)

| Timeframe | Org Affiliation | People | Commits | Additions | Deletions |
|--|--|--------|-------------|-----------------|-----------------|
| 1 Year Before the Relicense (2020-02-03 - 2021-02-03) | Elastic employees with 10+ commits | 67 | 6,477 (92%) | 1,377,558 (96%) | 623,561 (97%) |
| | Non-Elastic employees with 10+ commits | 3 | 94 (1%) | 3,855 (<1%) | 740 (<1%) |
| 1 Year after the relicense (2021-02-03 - 2022-02-03) | Elastic employees with 10+ commits | 65 | 5,668 (91%) | 1,597,988 (96%) | 1,061,154 (98%) |
| | Non-Elastic employees with 10+ commits | 2 | 47 (1%) | 7,283 (<1%) | 2,178 (<1%) |
| 1 Year Before Adding AGPL (2023-08-29 - 2024-08-29) | Elastic employees with 10+ commits | 99 | 7,616 (95%) | 2,621,830 (95%) | 1,123,628 (97%) |
| | Non-Elastic employees with 10+ commits | 1 | 11 (<1%) | 326 (<1%) | 326 (<1%) |

OpenSearch Repo (<https://github.com/opensearch-project/OpenSearch>)

| Timeframe | Organization | People | Commits | Additions | Deletions |
|--|---------------------------------------|--------|-----------|---------------|---------------|
| One Year After the Hard Fork (2021-04-12 to 2022-04-12) | Amazon employees with 10+ commits | 7 | 246 (34%) | 296,720 (80%) | 224,179 (91%) |
| | Non-Amazon employees with 10+ commits | 2 | 110 (15%) | 26,995 (7%) | 10,799 (4%) |
| One Year before move to LF (2023-09-16 to 2024-09-16) | Amazon employees with 10+ commits | 40 | 923 (49%) | 237,781 (63%) | 48,894 (65%) |
| | Non-Amazon employees with 10+ commits | 6 | 242 (13%) | 42,863 (11%) | 9,936 (13%) |
| 6 Months After LF (2024-09-16 - 2025-03-16) | Amazon employees with 10+ commits | 42 | 945 (50%) | 242,075 (64%) | 49,947 (66%) |
| | Non-Amazon employees with 10+ commits | 4 | 220 (12%) | 38,569 (11%) | 8,883 (12%) |

Relicensing: Users Drove Fork

Contributions from vendor employees. Fork created by new contributors in a foundation.



Key Dates:

- 2023-08-10: Terraform relicenses to BSL
- 2023-09-05: OpenTofu launched as fork under the LF

OpenTofu^{}

Terraform Repo (<https://github.com/hashicorp/terraform>)

| Timeframe | Org Affiliation | People | Commits | Additions | Deletions |
|--|---|--------|-------------|---------------|---------------|
| 1 Year before relicense (2022-08-10 - 2023-08-10) | HashiCorp employees with 5+ commits | 21 | 971 (82%) | 202,612 (93%) | 81,019 (95%) |
| | Non-HashiCorp employees with 5+ commits | 2 | 13 (1%) | 84 (<1%) | 33 (<1%) |
| 1 Year after relicense (2023-08-10 to 2024-08-10) | HashiCorp employees with 5+ commits | 24 | 1,620 (91%) | 672,393 (90%) | 242,052 (93%) |
| | Non-HashiCorp employees with 5+ commits | 2 | 18 (1%) | 353 (<1%) | 354 (<1%) |

OpenTofu Repo (<https://github.com/opentofu/opentofu>)

After 2023-09-05 fork
until 2024-09-05:

- 31 people at 11 companies with ≥ 5 commits
- None of these people previously contributed to Terraform

| People | Organization | Commits | Additions | Deletions |
|--------|----------------------------|---------|----------------|----------------|
| 10 | Spacelift | 328 | 88121 (55.21%) | 63992 (69.15%) |
| 6 | Env0 | 99 | 26507 (16.61%) | 12248 (13.23%) |
| 3 | Scalr | 47 | 12516 (7.84%) | 3374 (3.65%) |
| 3 | Harness | 17 | 2948 (1.85%) | 366 (0.40%) |
| 3 | Red Hat | 15 | 1605 (1.01%) | 159 (0.17%) |
| 1 | Hangzhou Dianzi University | 6 | 891 (0.56%) | 242 (0.26%) |
| 1 | Chainguard | 6 | 266 (0.17%) | 93 (0.10%) |
| 1 | lessops | 6 | 2017 (1.26%) | 226 (0.24%) |
| 1 | claranet | 6 | 118 (0.07%) | 20 (0.02%) |
| 1 | Cooby-inc | 5 | 72 (0.05%) | 69 (0.07%) |
| 1 | <u>nvdnc</u> | 5 | 68 (0.04%) | 11 (0.01%) |

Relicensing: Contributors Drove Fork

Significant contributors not
employed by the vendor.
Fork created by existing
contributors in a foundation.



Key Dates:

- 2024-03-20: Redis relicenses to SSPL & RSAL
- 2024-03-28: Valkey fork launched as an LF project
- 2025-05-01: Redis adds the AGPL

Redis Repo (<https://github.com/redis/redis>)

| Timeframe | Organization | People | Commits | Additions | Deletions |
|--|-------------------------------------|--------|-----------|---------------|--------------|
| One year before relicense (2023-03-20 - 2024-03-20) | Redis employees with 5+ commits | 6 | 164 (28%) | 189,656 (80%) | 83,122 (74%) |
| | Non-Redis employees with 5+ commits | 12 | 319 (54%) | 28,334 (12%) | 16,684 (15%) |
| One year after relicense (2024-03-20 - 2025-03-20) | Redis employees with 5+ commits | 10 | 303 (75%) | 65,901 (66%) | 16,430 (73%) |
| | Non-Redis employees with 5+ commits | 0 | 0 | 0 | 0 |

Valkey Repo (https://github.com/valkey-io/valkey)

After 2024-03-28 Fork
(until 2025-03-28):

- 52 people at 13 companies with ≥ 5 commits
- 22 of these people previously contributed to Redis

| People | Organization | Commits | Additions | Deletions |
|--------|------------------|---------|----------------|----------------|
| 29 | Amazon | 335 | 42314 (25.13%) | 15759 (15.99%) |
| 4 | Alibaba | 20 | 2049 (1.22%) | 419 (0.43%) |
| 2 | Google | 46 | 44524 (26.44%) | 40971 (41.58%) |
| 2 | Ericsson | 110 | 22282 (13.23%) | 8173 (8.30%) |
| 2 | Samsung | 5 | 48 (0.03%) | 48 (0.05%) |
| 2 | ByteDance | 22 | 6903 (4.10%) | 2456 (2.49%) |
| 1 | Percona | 14 | 4591 (2.73%) | 2595 (2.63%) |
| 1 | LINE Corporation | 6 | 130 (0.08%) | 100 (0.10%) |
| 4 | Huawei | 97 | 3702 (2.20%) | 3191 (3.24%) |
| 2 | Intel | 22 | 775 (0.46%) | 524 (0.53%) |
| 1 | @gnet-io | 8 | 104 (0.06%) | 73 (0.07%) |
| 1 | @Aliyun | 6 | 107 (0.06%) | 67 (0.07%) |
| 1 | Tencent Cloud | 200 | 9337 (5.54%) | 4513 (4.58%) |

Stars and Forks as Proxy for Usage

(Vargas et. al., 2024)

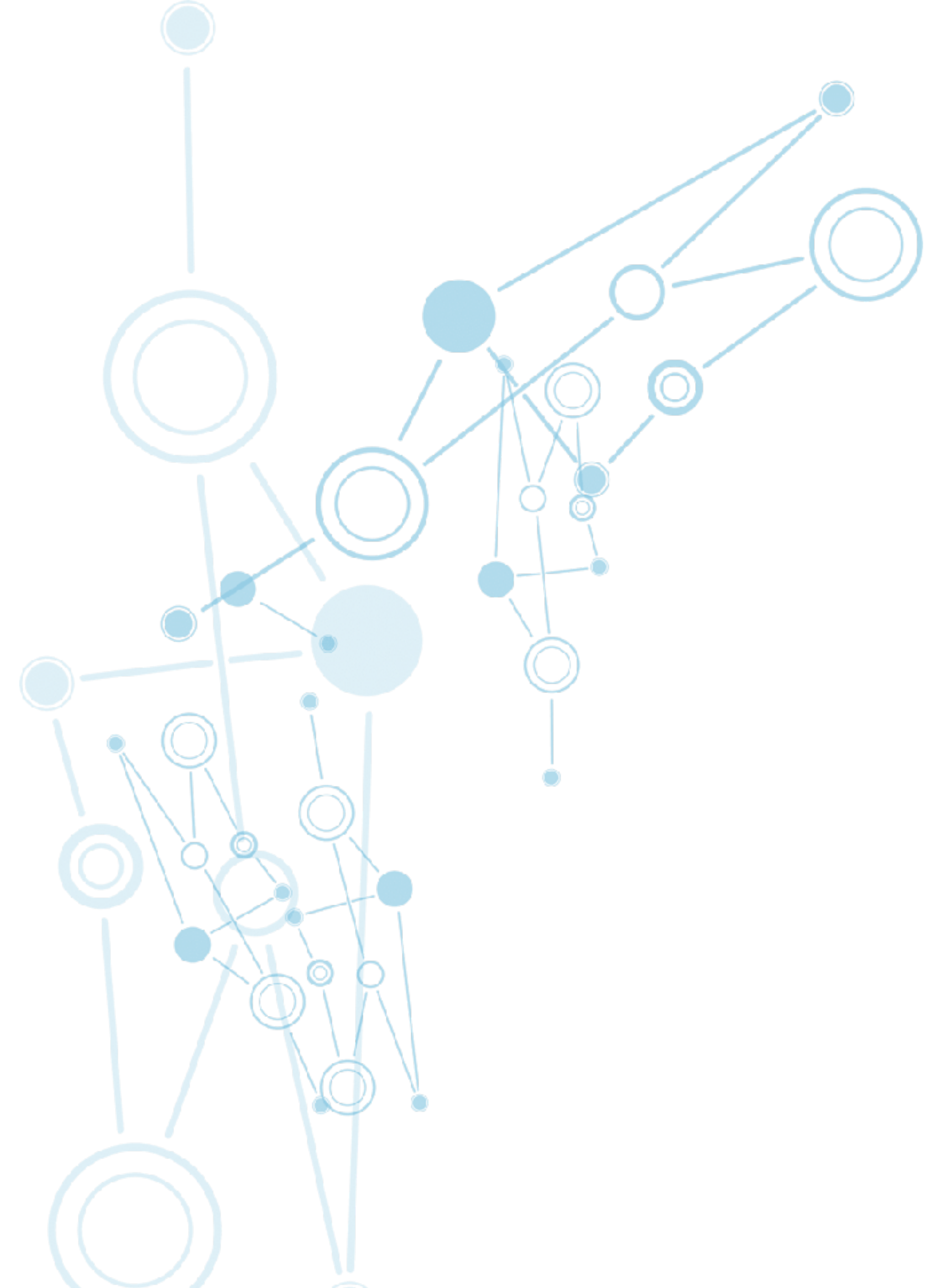
Original project and fork
are both used.

Relicensed projects have
reduced usage due to
some users switching to
the fork.

More pronounced in
foundation forks
(OpenTofu / Valkey).

| Median new stars / new forks per day | | Stars | Forks |
|--------------------------------------|-------------------------------------|-------|-------|
| Elasticsearch | One year before relicense | 21 | 12 |
| | After relicense, before adding AGPL | 14 | 6 |
| | 6 months after adding AGPL | 14 | 4 |
| OpenSearch | Before joining LF (all time) | 5 | 2 |
| | 6 months after joining LF | 5 | 2 |
| Terraform | One year before relicense | 13 | 3 |
| | One year after relicense | 10 | 3 |
| Open Tofu | One year after fork | 20 | 2 |
| Redis | One year before relicense | 15 | 3 |
| | One year after relicense | 14 | 3 |
| Valkey | One year after fork | 17 | 2 |

What can we do?



Legal Stuff*

Contributor License Agreement (CLA)
vs.
Developer Certificate of Origin (DCO)



Neutral Foundations

Embrace projects
under foundations
where we can all
participate as equals



CLOUD NATIVE
COMPUTING FOUNDATION



Neutral Governance

Level playing field with
leaders/ maintainers from
a variety of organizations
and a fair and transparent
process for selecting them



Contributor Sustainability

Enough contributors
to sustain the
project over time



Image by the CNCF
@geekygirl dawn

Contribute!

Have your employees contribute to the projects that are most important for your company to improve the sustainability of those projects from within

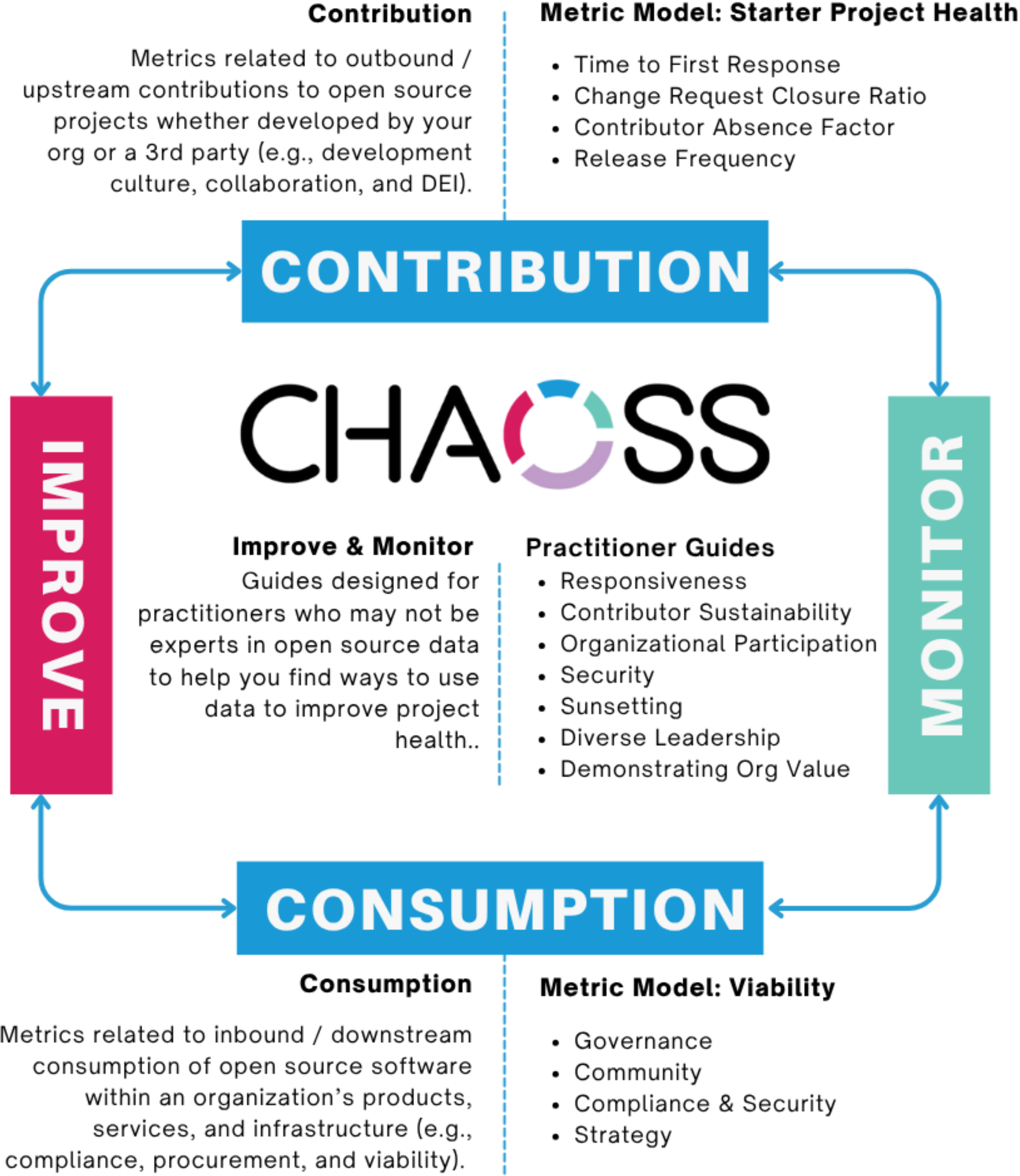


CHAOSS Resources

Practitioner Guides
and collections of
metrics to improve the
health and sustainability
of your projects

<https://chaoss.community/kb/metrics-model-project-viability-starter/>

<https://chaoss.community/about-chaoss-practitioner-guides/>



Resources and References

Resources:

- chaoss.community
- github.com/chaoss/wg-data-science
- github.com/chaoss/wg-data-science/tree/main/dataset/license-changes/fork-case-study
- chaoss.community/about-chaoss-practitioner-guides

References:

- Foster, D. (2024, November 13-14). The New Dynamics of Open Source: Relicensing, Forks, and Community Impact. OpenForum Academy Symposium 2024, Boston, Massachusetts, Available at <https://doi.org/10.48550/arXiv.2411.04739>.
- Germonprez, M., Kendall, J. E., Kendall, K. E., Mathiassen, L., Young, B., & Warner, B. (2017). A Theory of Responsive Design: A Field Study of Corporate Engagement with Open Source Communities. *Information Systems Research*, 28(1), 64-83.
- Mindel, V., Mathiassen, L., & Rai, A. (2018). The Sustainability of Polycentric Information Commons. *MIS quarterly*, 42(2), 607-632.
- Vargas, S., Link, G., & Lee, J. (2024, April). Estimating Usage Of Open Source Projects. In *Proceedings of the 21st International Conference on Mining Software Repositories* (pp. 652-653).

Final Thoughts

**Relicensing and forks shift
the power dynamics in
open source projects to allow
those with less power
to take collective action
and gain power back**

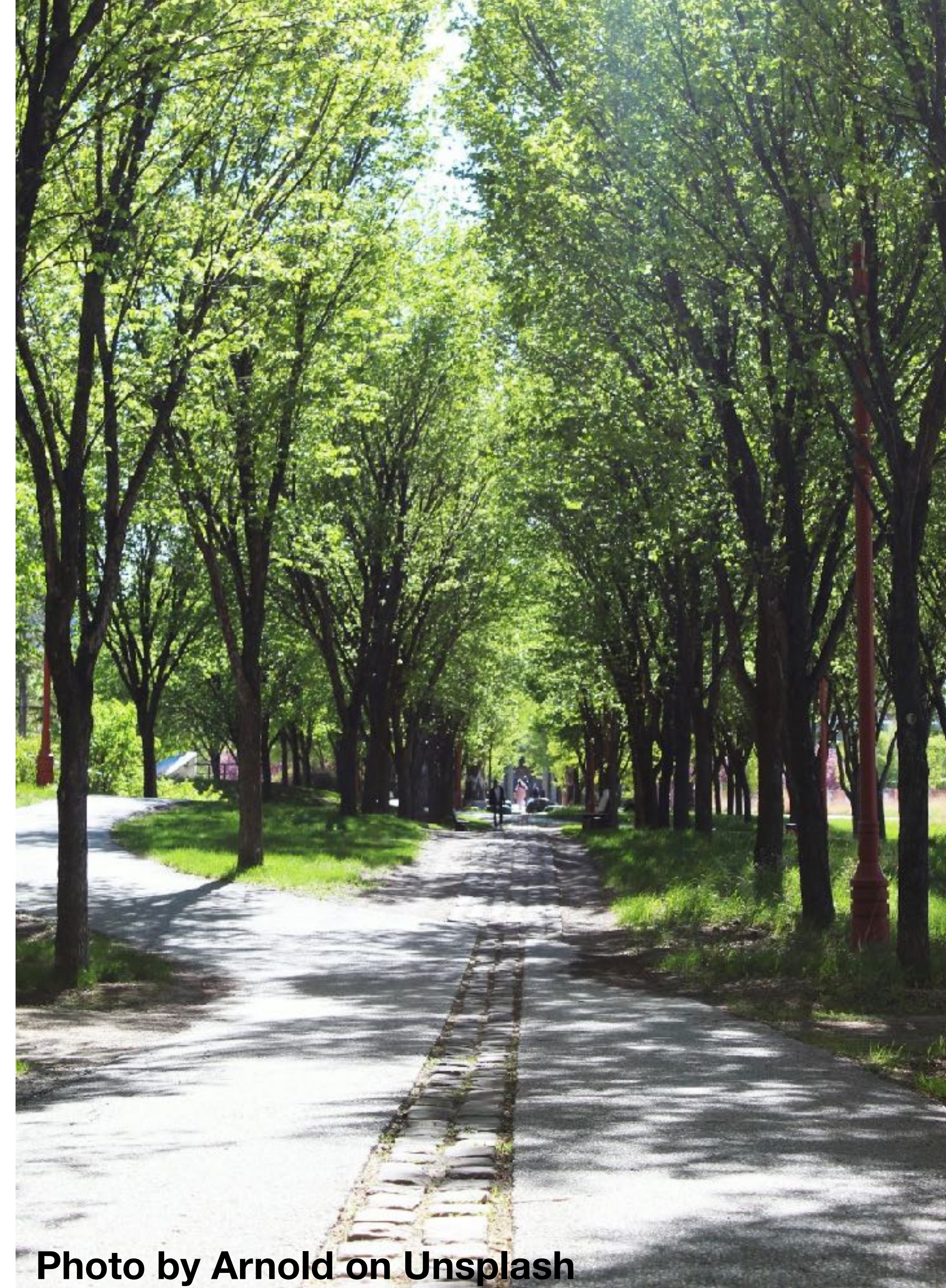








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THANK YOU!

Any Questions?

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