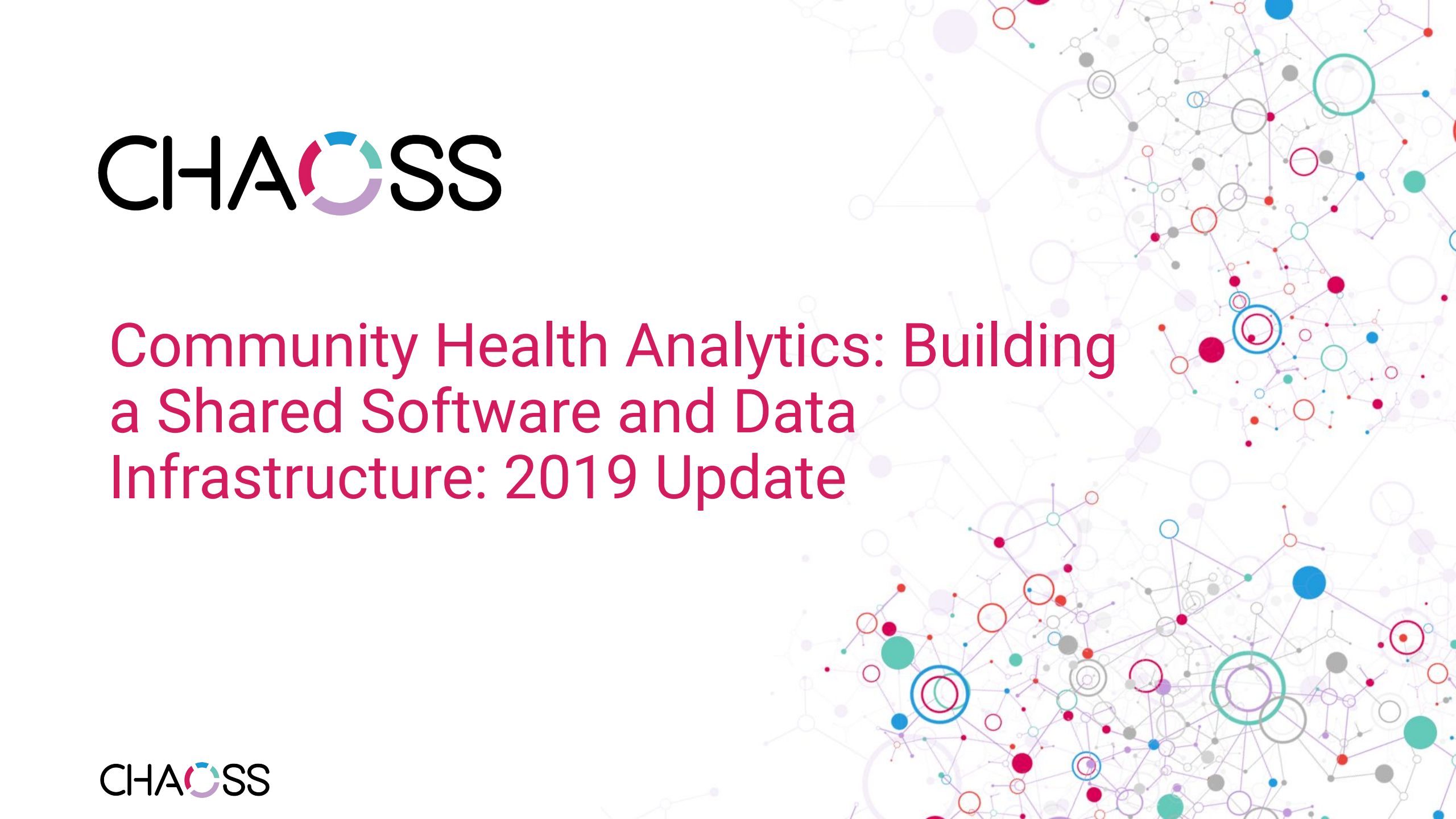


# Community Health Analytics: Building a Shared Software and Data Infrastructure: 2019 Update

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# How to track sustainable projects...

How can we know if this open source project is likely to be around in 10 years if we base a product on it?

How can we know if this open source project is ready to be used by another project?

Is there a diverse community of active contributors engaged in the project?

Are there licensing risks in using this open source project?

What is the health of the other projects that this project depends on?

… need a common understanding of open source project health.

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# CHAOSS Mission

*Establish implementation-agnostic metrics for measuring community activity, contributions, and health.*

*Produce integrated, open source software for analyzing software development in terms of these metrics.*

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# Working in an Open Community...









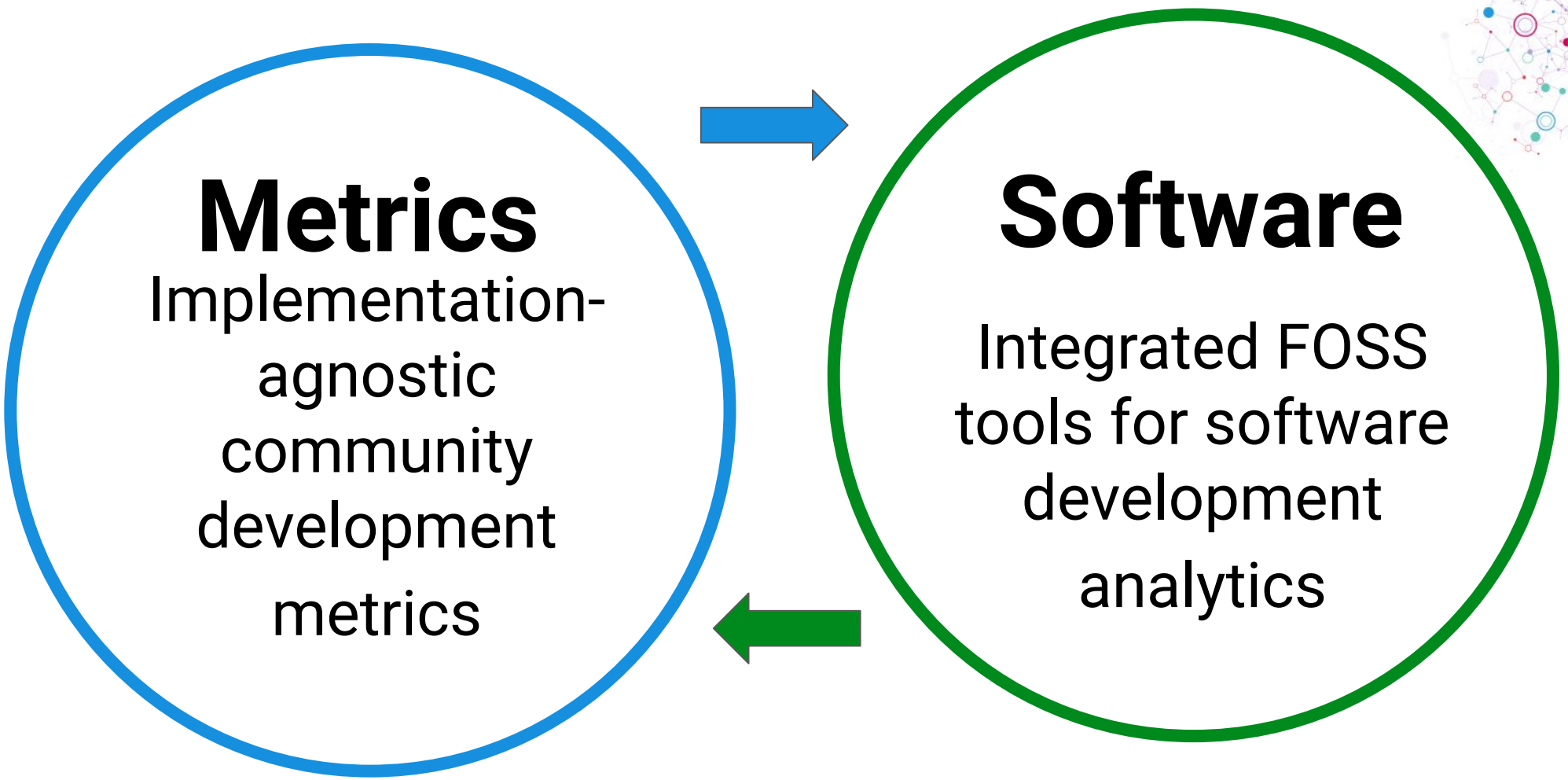








# Structure: Focus Around Interests




Thoughts from the morning:

1. Separating the technology from the management

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# Working Groups

| Diversity-Inclusion | Evolution |
| --- | --- |
| **Risk** | **Value** |
| **Common** | |

wiki.linuxfoundation.org/chaoss/metrics

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# Evolution

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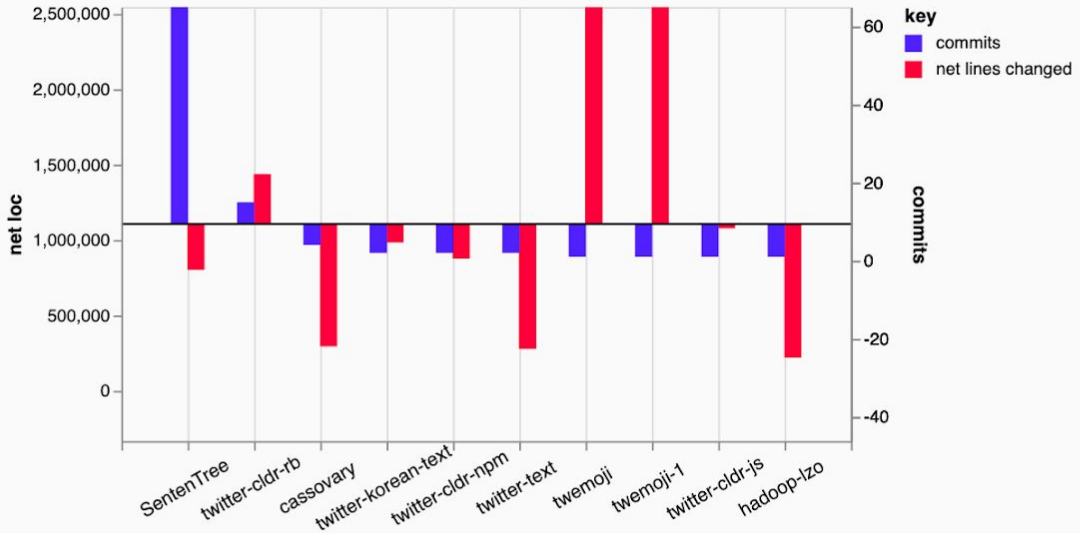
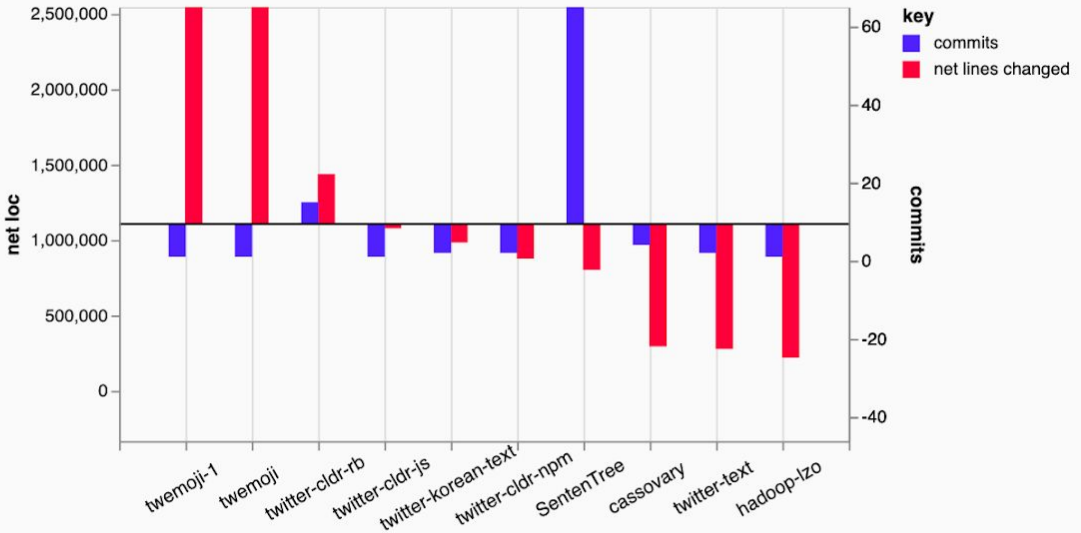
## Project Overview: Twitter

Top Repos in 2018 by Commits with Baseline Averages - Sorted




*The black "baseline" represents the averages of both LoC and commits across all repositories within the selected repository's overlying Facade organization during the calendar year shown. Wherever this bar stretches to shows how far above or below the raw value of the statistic is from the regular average.

Top Repos in 2018 by Net LoC with Baseline Averages - Sorted




*The black "baseline" represents the averages of both LoC and commits across all repositories within the selected repository's overlying Facade organization during the calendar year shown. Wherever this bar stretches to shows how far above or below the raw value of the statistic is from the regular average.

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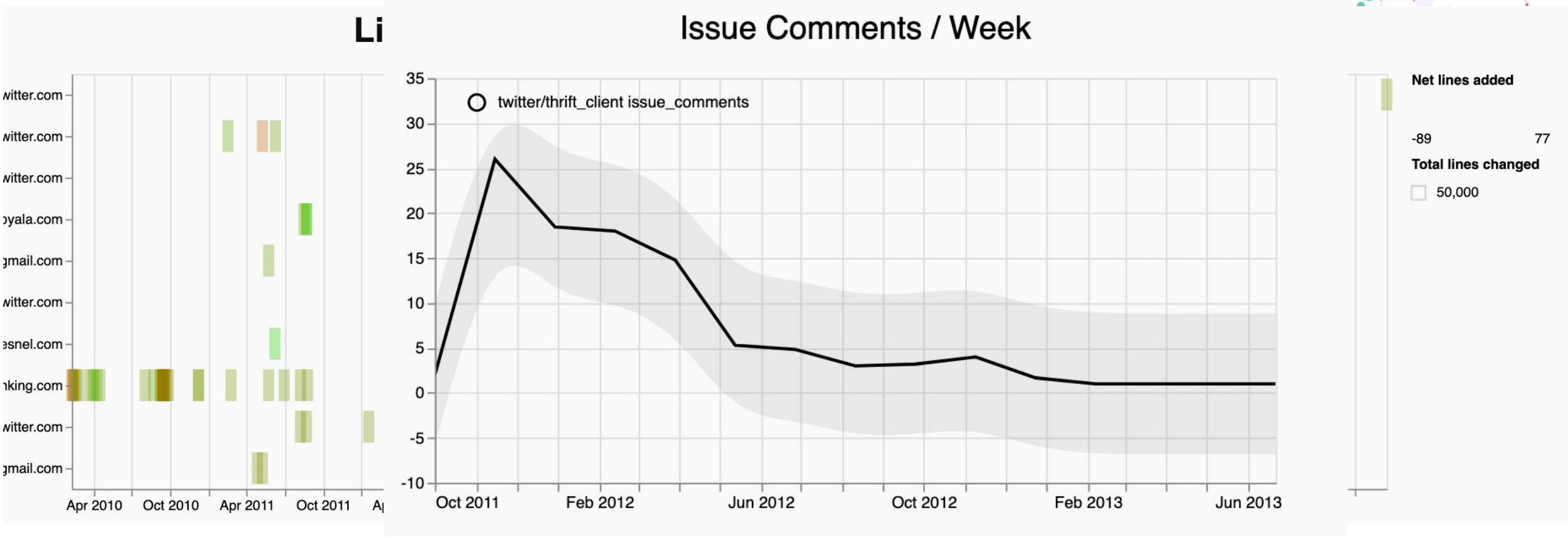
# Evolution

**github.com/twitter/thrift_client.git**



# Diversity & Inclusion

Goal: The CHAOSS D&I Working Group establishes and broadly communicates an ethical, peer-validated, research-informed, set of standards and best practices for measuring diversity and inclusion in open source projects, and ensures that CHAOSS project software can implement D&I metrics according to identified goals for inclusion with validation from key industry partnerships in open source. See 2019 objectives for more detail.

**Objective #4: Ethical Guidelines**

The D&I Working Group has explored key questions of ethics and established ethical guidelines which everyone has to follow before they are allowed to use the brand "CHAOSS D&I Metrics."

- KR 1 - We have crowdsourced and prioritized ethical considerations around data collection, usage, storage, analysis, and reporting.
- KR 2 - We have documented ethical best practices for D&I metrics and embedded them in our project documentation.
- KR 3 - We evaluated solutions for how we could enforce ethical best practices for anyone who wants to use CHAOSS D&I Metrics.
- KR 4 - We have published a blog post about how we developed the ethical guidelines and encourages adoption.

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# Risk and Value Working Groups Focus Areas

**Risk**

- Security
- Quality
- Licensing
- Business Risk
- Transparency

**Value**

- Labor Investment
- Innovation Value
- Downstream Value
- Ecosystem Value
- Living Wage


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# Value

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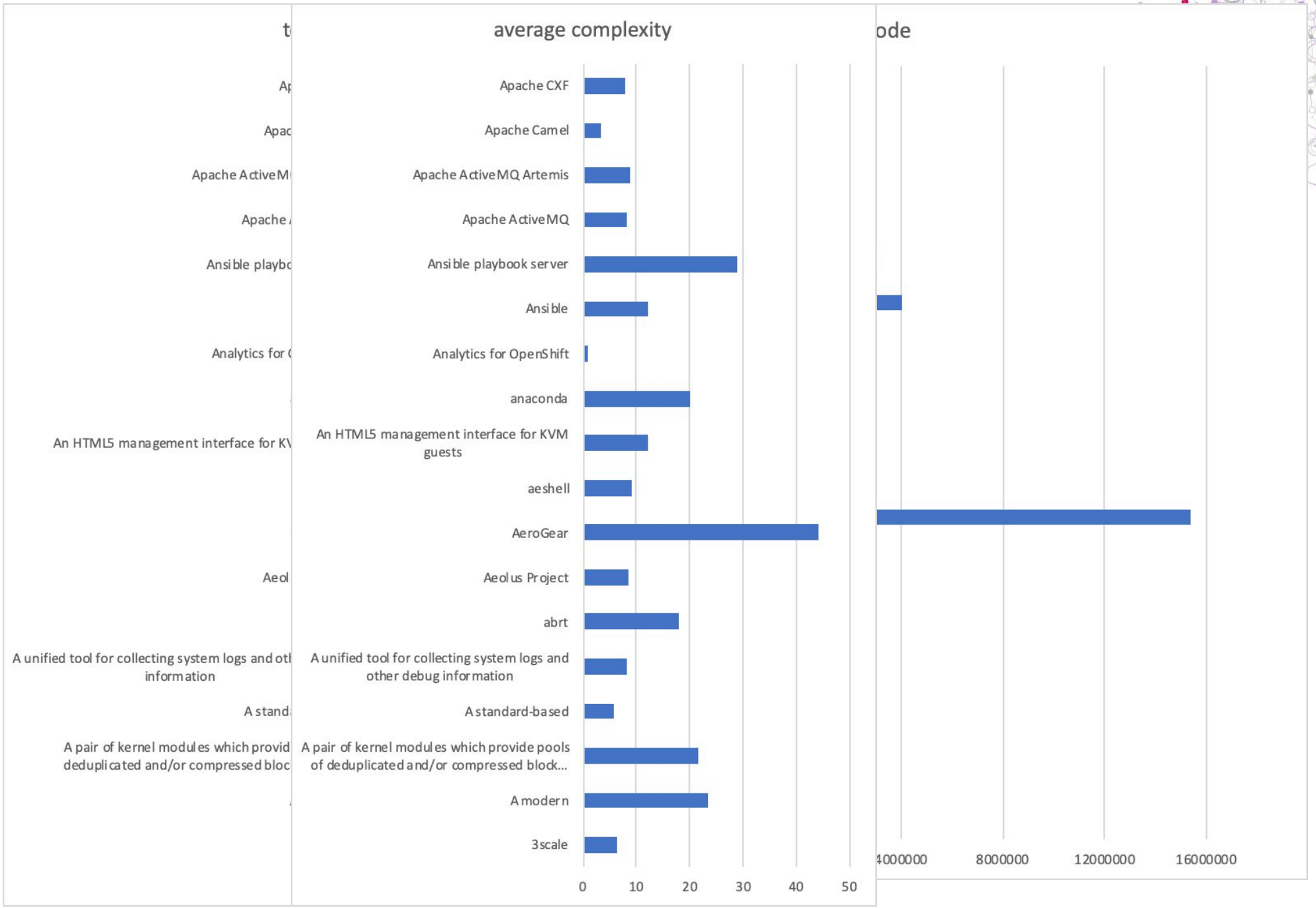


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# Value

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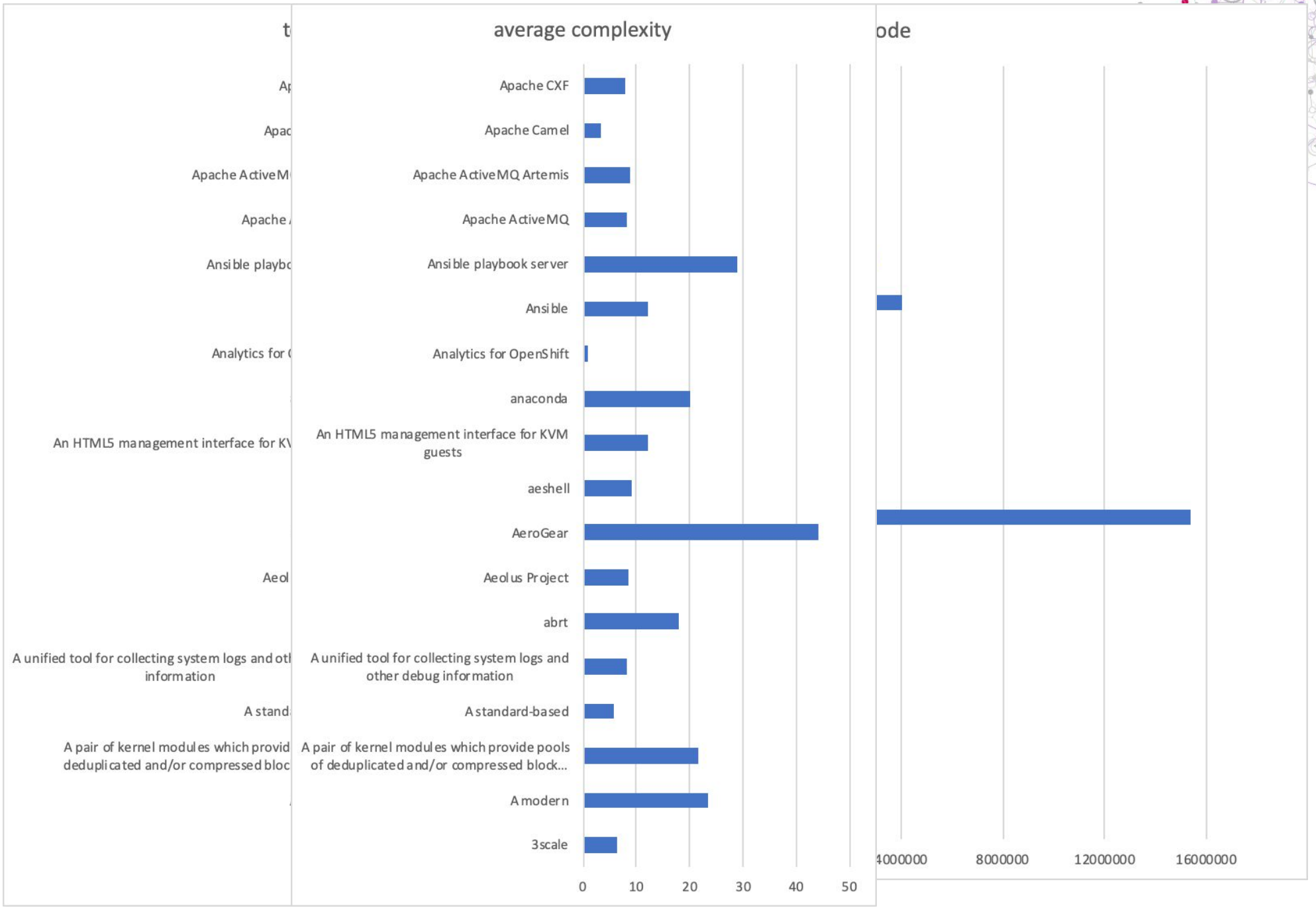


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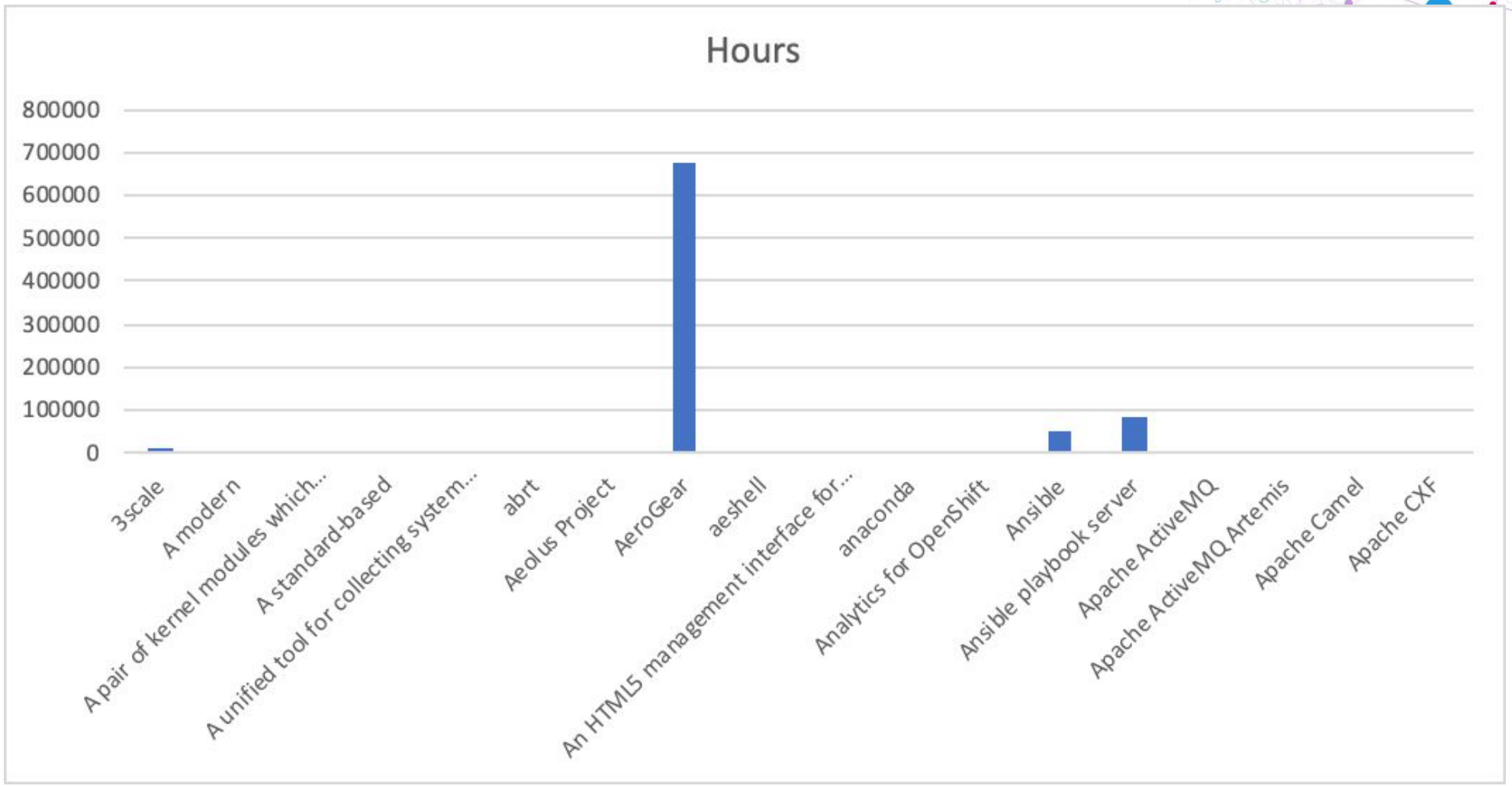
# Value

**Simple Formula for Illustration:** Lines of Code times Complexity
You can parameterize this using Augur, and put in your own formulas

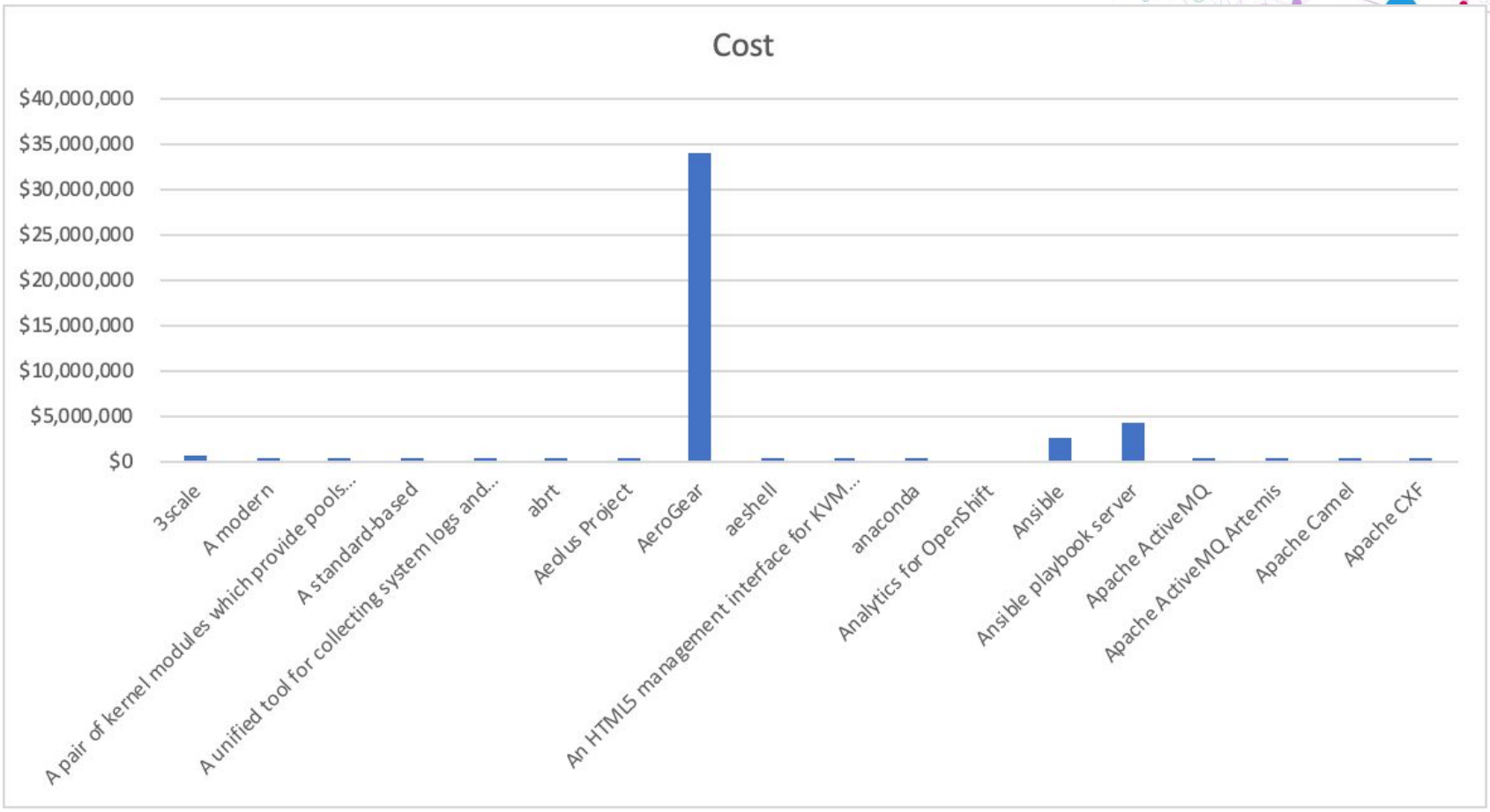
| name | Hours |
|---|---|
| 3scale | 10,173 |
| A modern | 1,162 |
| A pair of kernel modules which p | 2,631 |
| A standard-based | 6,723 |
| A unified tool for collecting syste | 166 |
| abrt | 5,600 |
| Aeolus Project | 1,862 |
| AeroGear | 678,080 |
| aeshell | 708 |
| An HTML5 management interface | 1,857 |
| anaconda | 1,651 |
| Analytics for OpenShift | 0 |
| Ansible | 48,892 |
| Ansible playbook server | 83,666 |
| Apache ActiveMQ | 5,560 |
| Apache ActiveMQ Artemis | 7,026 |
| Apache Camel | 5,370 |
| Apache CXF | 6,512 |



# Value

**Simple Formula for Illustration:** (**Hours**: Lines of Code times Complexity) **times $50/hr**
You can parameterize this using Augur, and put in your own formulas

| name | Cost |
|---|---|
| 3scale | 508,671 |
| A modern | 58,096 |
| A pair of kernel modules which p | 131,532 |
| A standard-based | 336,158 |
| A unified tool for collecting syste | 8,317 |
| abrt | 280,015 |
| Aeolus Project | 93,115 |
| AeroGear | 33,904,017 |
| aeshell | 35,396 |
| An HTML5 management interface | 92,863 |
| anaconda | 82,575 |
| Analytics for OpenShift | 8 |
| Ansible | 2,444,603 |
| Ansible playbook server | 4,183,313 |
| Apache ActiveMQ | 278,006 |
| Apache ActiveMQ Artemis | 351,324 |
| Apache Camel | 268,516 |
| Apache CXF | 325,616 |

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# Value

**What languages are used in a repository and to what extent?**
**Do the complexity estimations have face validity?**

| name | Cost |
|---|---|
| 3scale | 508,671 |
| A modern | 58,096 |
| A pair of kernel modules which p | 131,532 |
| A standard-based | 336,158 |
| A unified tool for collecting syste | 8,317 |
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| Apache ActiveMQ | 278,006 |
| Apache ActiveMQ Artemis | 351,324 |
| Apache Camel | 268,516 |
| Apache CXF | 325,616 |

| 3scale | 16082 | 407.5 |
|---|---|---|
| JSON | 506336 | 0 |
| Ruby | 364529 | 2.1926 |
| JavaScript | 270803 | 83.7365 |
| PHP | 83434 | 7.5479 |
| YAML | 77829 | 0 |
| Lua | 55800 | 7.3698 |
| Markdown | 38926 | 0 |
| CSS | 32519 | 0 |
| Go | 27205 | 21.29 |
| HTML | 24425 | 0 |
| Sass | 15699 | 0.122 |
| XML Schema | 15391 | 0 |
| Gherkin Specification | 13148 | 1.3604 |
| TypeScript | 8692 | 8.4125 |

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# Risk

Risk Metrics Prototyping Initiation List (Draft)

1. Security
   a. CII Best Practices Badge status (Developing. Included in Augur data model)
   b. Programming Language Analysis (Developing. Included in Augur Data model)
2. Code Quality
   a. Code complexity (Developing. Included in Augur Data model)
   b. Test Coverage (Exploring tools)
   c. Pull request approval rules in place (GitHub)
      i. Metric: Exploring if a PR has a high number of comments Unique comments might be something to consider
3. Licensing
   a. License SBOM analysis (DoSocs) (Developing. We have a prototype, but DoSocs is complex to deploy)
   b. License declaration in repository (Developing. Included in Augur Data model)
4. Transparency
   a. SBOM (DoSocs) (Developing. We have a prototype, but DoSocs is complex to deploy)
   b.
5. Business Risk
   a. Community activity metrics
      i. Code
         1. Commits (Available in Augur)
         2. LoC (Developing. We have a prototype, but DoSocs is complex to deploy. We do have “Top Ten Committer” data in the UI, but I think this analysis is different.)
         3. Committers (Developing. We have a prototype, but DoSocs is complex to deploy. We do have “Top Ten Committer” data in the UI, but I think this analysis is different.)
      ii. Issues
         1. Issue resolution time (Developing. Included in Augur Data model)
         2. Issue volume and status (Developing. Included in Augur Data model)
   b. Elephant Factor (Developing. Included in Augur Data model. We do have a data endpoint for this already, but are going to put it in the UI.)
   c. Bus Factor (Developing. Included in Augur Data model)

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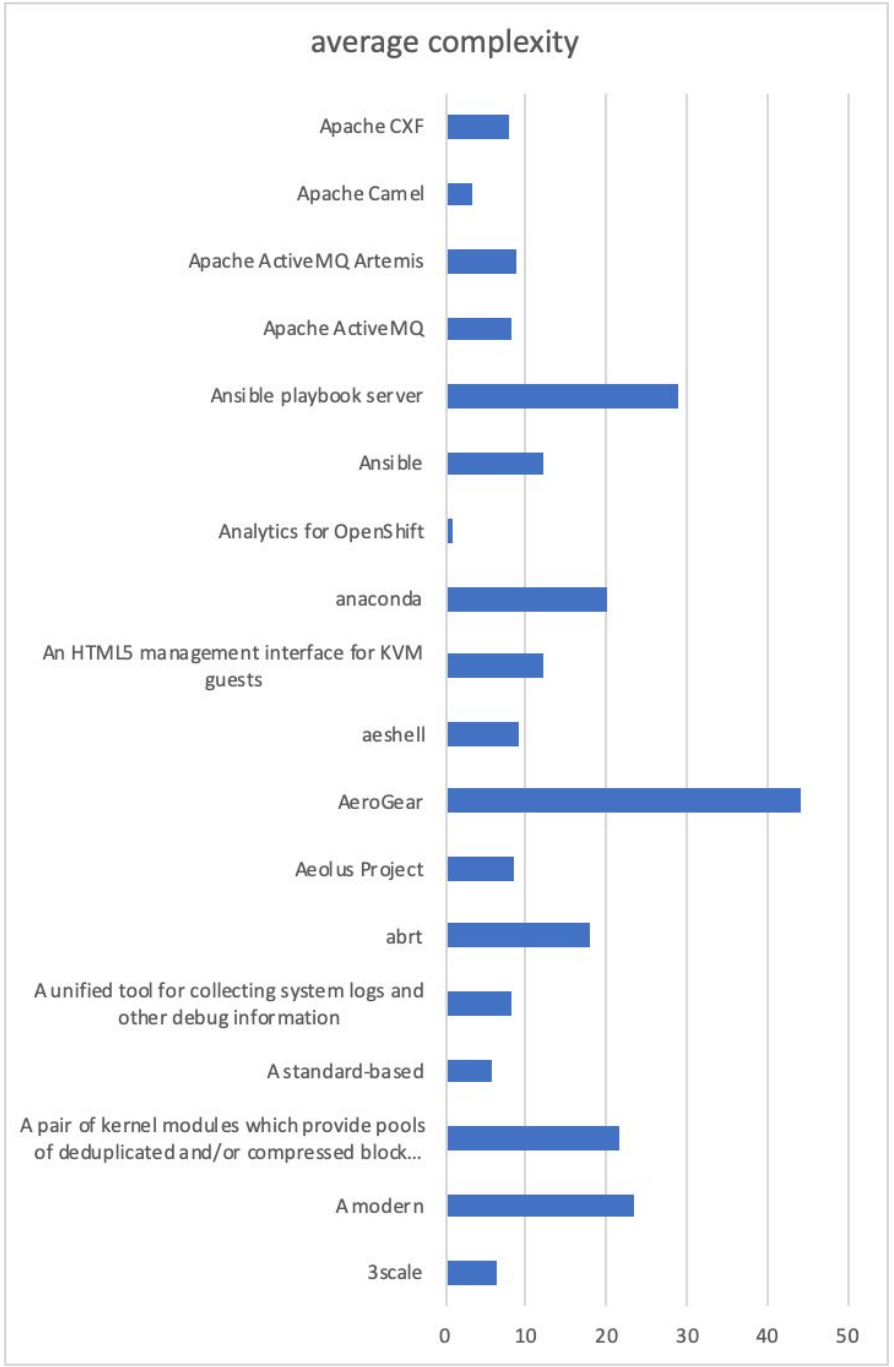
# Risk

Estimating complexity with COCOMO inspired analysis

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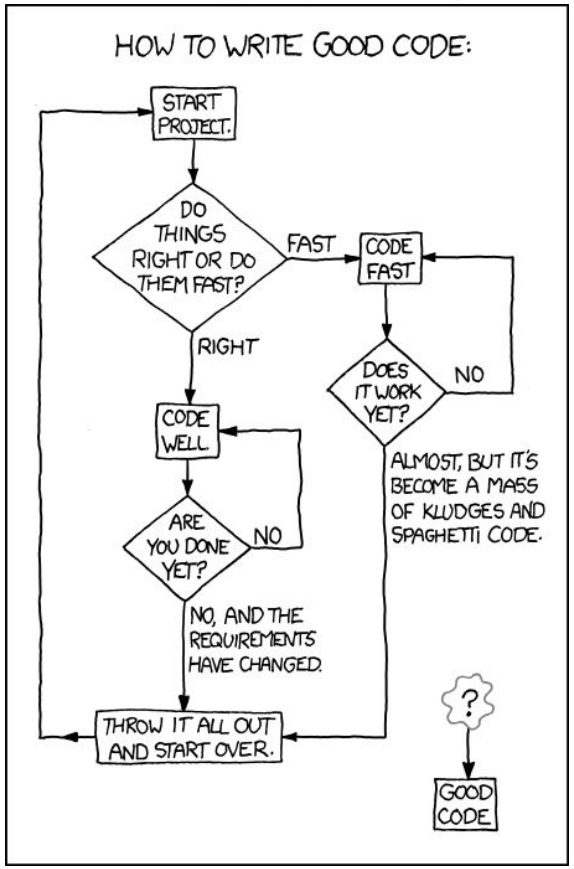
# Why Risk and Value?

- No single health determination can be made across all open source projects, however:
  - **We can start to understand what composite metrics signal and how they can be related to actions**
- We aim to provide insight as local interpretations are done on the metrics
  - **Provide guideposts for what others have done in similar contexts and how peer communities compare**
- Develop an understanding of development processes based on facts

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# Common Working Group: Focus on Decoding on Identity in Compliance with Regulations

Contributor aliases

Contributors

Organizational Affiliation

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# Getting Engaged with the CHAOSS Community

Mailing lists

- General discussions: https://lists.linuxfoundation.org/mailman/listinfo/chaoss-discussions
- Metrics Committee: https://lists.linuxfoundation.org/mailman/listinfo/oss-health-metrics
- Software Committee: https://lists.linuxfoundation.org/mailman/listinfo/chaoss-software
- CHAOSS Board archives: https://lists.linuxfoundation.org/pipermail/chaoss-members/

IRC Channel: #chaoss-community on freenode

Wiki: https://wiki.linuxfoundation.org/chaoss

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# Participating in CHAOSS

Code

- https://github.com/chaoss

Meetings

- Metrics committee
  - Weekly hangouts
  - Monthly calls
- Software committee

Events

- https://wiki.linuxfoundation.org/chaoss/events

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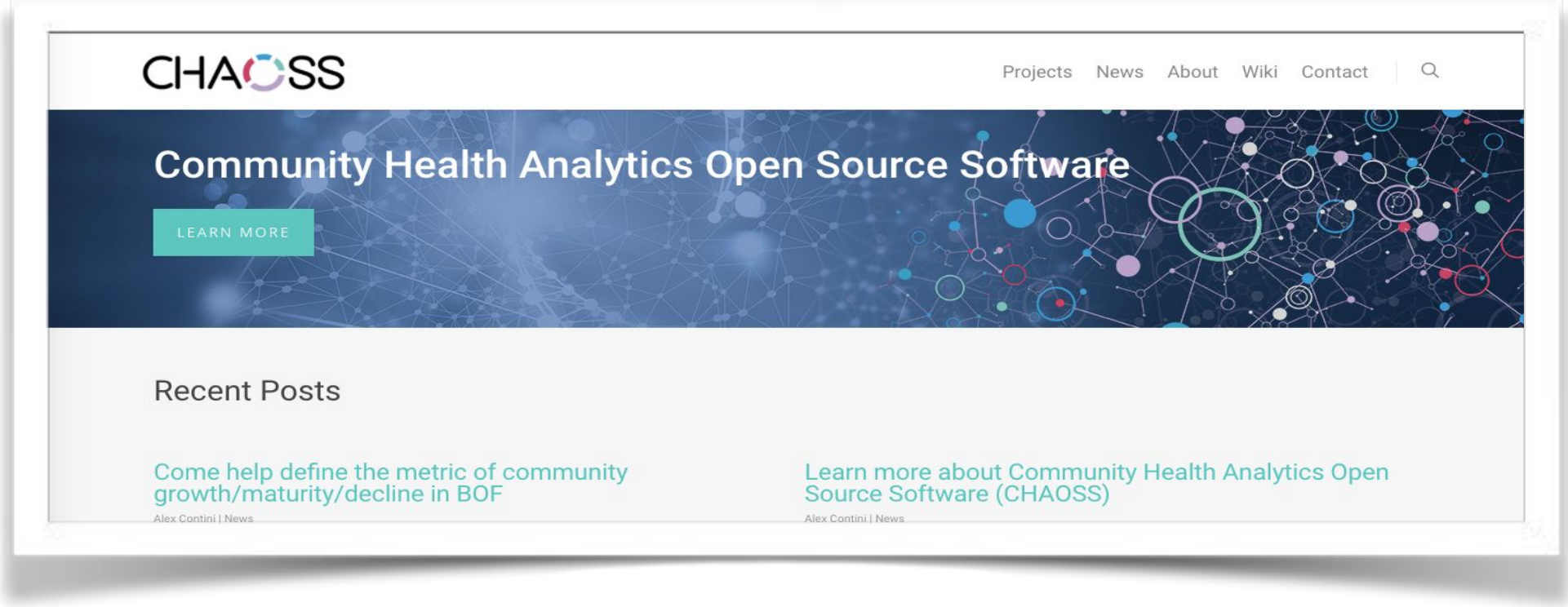
# A Growing Community




**Discussion:** Mailing Lists, Periodic Meetings, Weekly Hangouts, IRC Channels

**Code:** Issues, Pull requests welcome

chaoss.community

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# How to Get Started with CHAOSS

**How to get started**

- Join our mail list and introduce yourself.
- Look through the mail list archive for past discussions and self-introductions of people involved.
- Join our monthly phone call on your calendar.
- Join our weekly hangout on your calendar.

**How to contribute**

- Join our weekly hangouts and monthly calls.
- Share your experience with metrics.
- Let us know what you would like CHAOSS to do for you.
- Just participate in the conversation.

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# Community Health Analytics: Building a Shared Software and Data Infrastructure

Health Metric Software and Data Infrastructure:

1. How, to what extent and in what ways does your current research stand to benefit from leveraging and contributing to a shared software infrastructure?
2. How and to what extent are you gathering novel data or reusing current data in the course of your research?
3. What to do about metrics that run counter to open source culture but are becoming mainstream in the broader culture?

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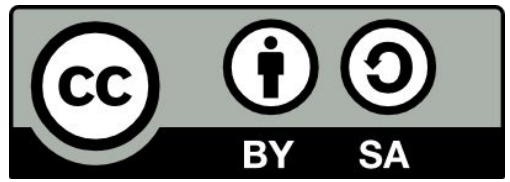
# Join us to extract knowledge from




chaoss.community

# License & Credits






Credits:

- Good code”, Comic by Randall Munroe, XKCD 844
  License: Creative Commons Attribution-NonCommercial 2.5
  xkcd.com/844/

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