CHAOSS: Conceptualizing, Prototyping and Evaluating Open Source Software Project Health Metrics: Measuring Growth, Maturity, Decline and License Risk with Software

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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.

Working in an Open Community...

eclipse

openstack™

SYMPHONY SOFTWARE FOUNDATION

Software Sustainability Institute

Bitergia

moz://a

redhat

CLOUD NATIVE COMPUTING FOUNDATION

Linaro

SAUCELABS

SECO Health

THE LINUX FOUNDATION

University of Nebraska Omaha

University of Missouri

University of Victoria

JONO BACON CONSULTING

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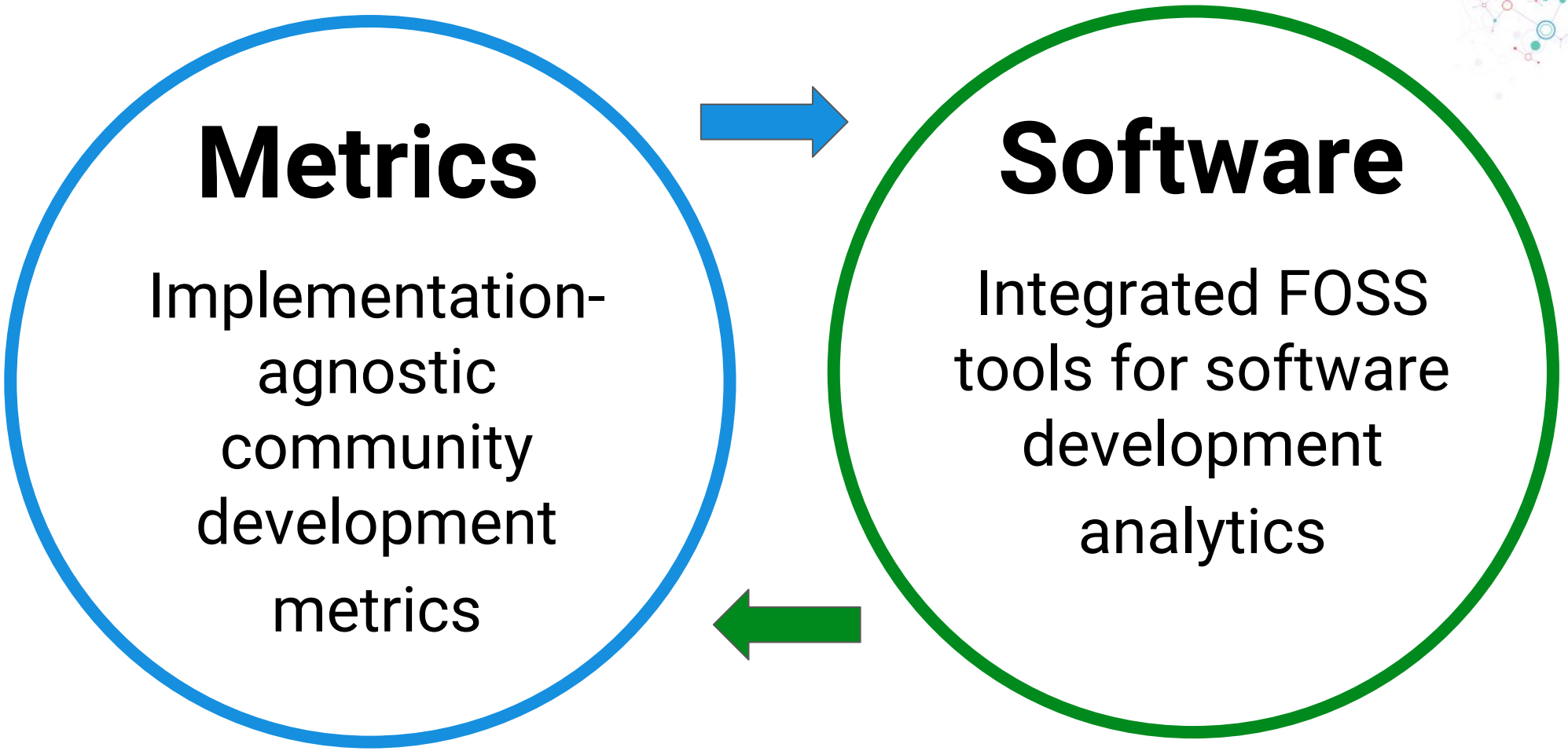
Structure: Focus Around Interests



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Metrics Committee

Diversity-Inclusion	Growth-Maturity-Decline
Risk	Value

wiki.linuxfoundation.org/chaoss/metrics

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Diversity and Inclusion are known to challenge unchecked assumptions and lead to more open and fair collaboration practices.

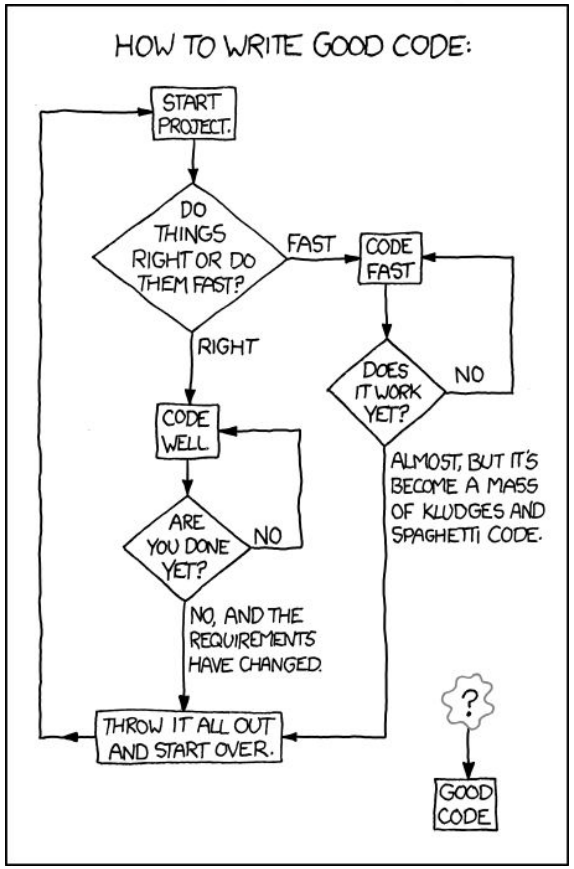
An OSS community has states: ***Growth, Maturity, and Decline***. The state that a community is in may prove important when evaluating both across and within community concerns.

The ***Risk*** metric informs how much risk an OSS community might pose. The evaluation of risk depends on situation and purpose.

Developers and organizations capture ***Value*** from engaging in OSS communities. This set of metrics can inform what this value is.

Why?

- 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



Software Committee

Implement Reference in Open Source

- Develop a FLOSS reference implementation of defined metrics.
- Integrate GrimoireLab, GHData, Prospector, and cregit into an Open Source Collaborative Framework
- Develop a better understanding of how contributions happen to large projects over time.

GHData

Prospector

cregit

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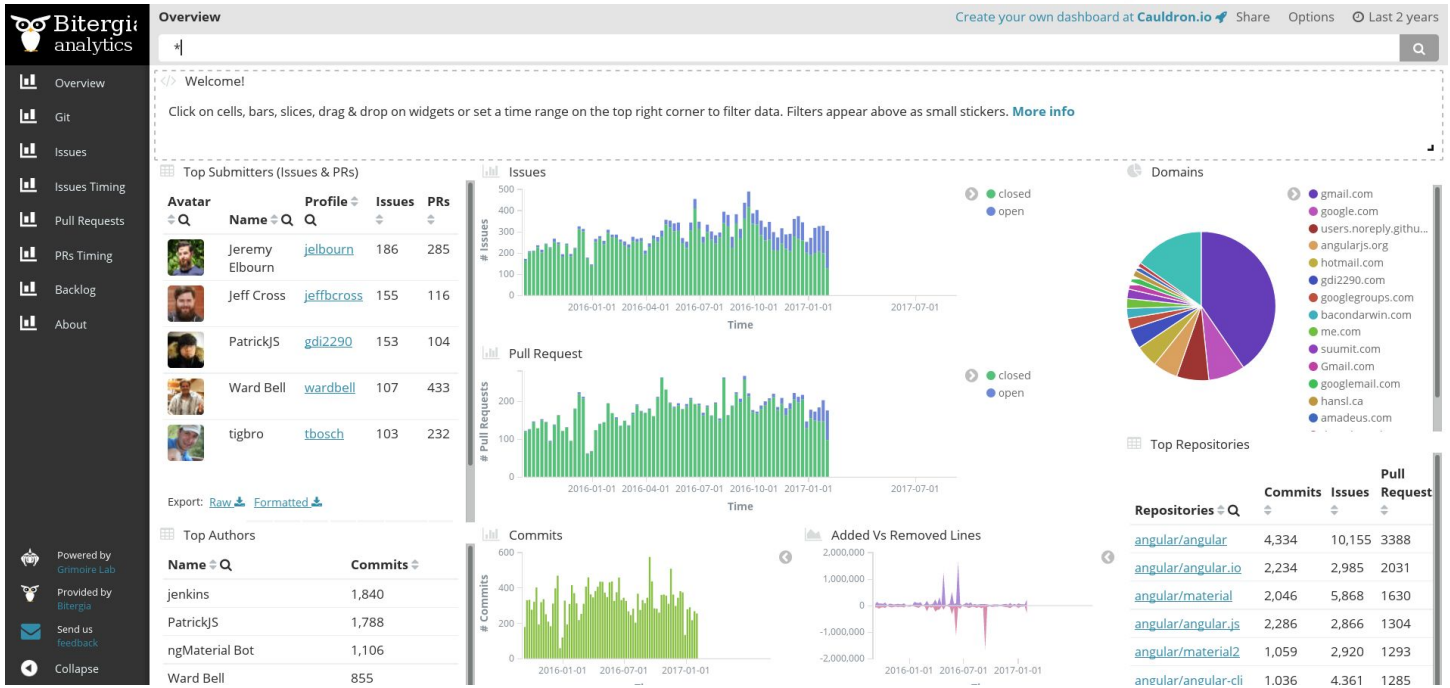
GrimoireLab

- Retrieval from +30 data sources
- Storage of all metadata (ElasticSearch)
- Computing of interesting metrics
- Visualization
- Reports



github.com/chaoss/grimoirelab

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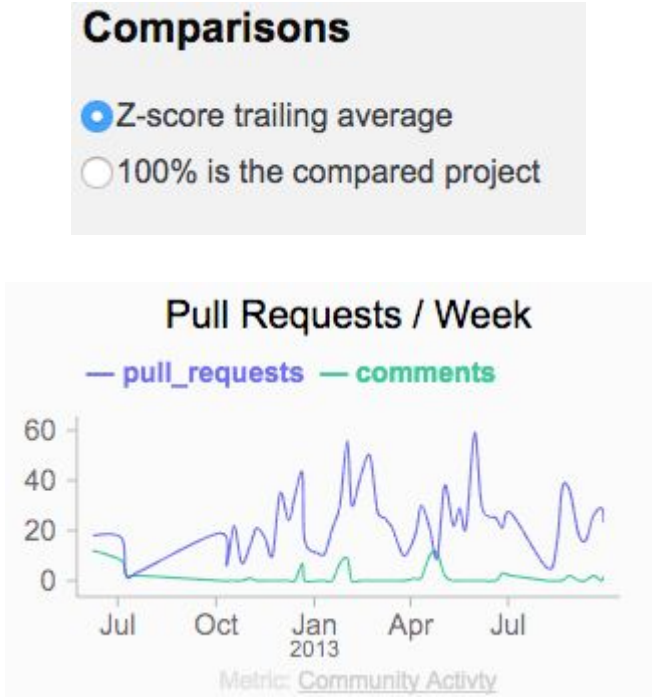
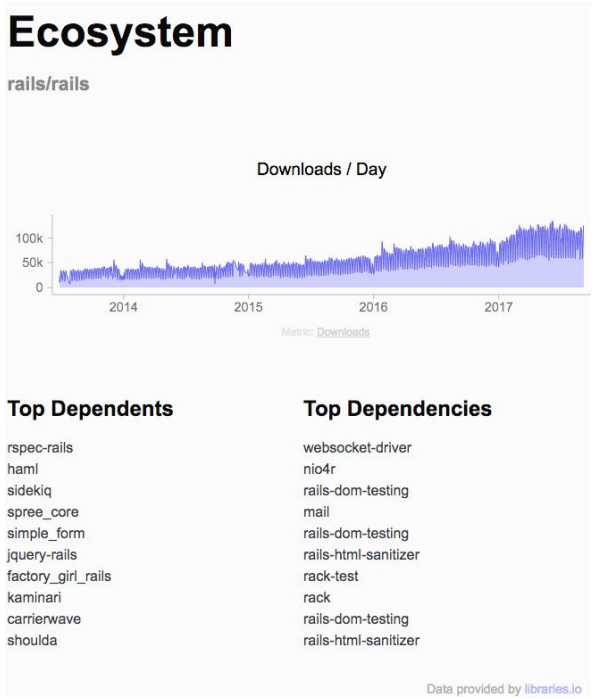
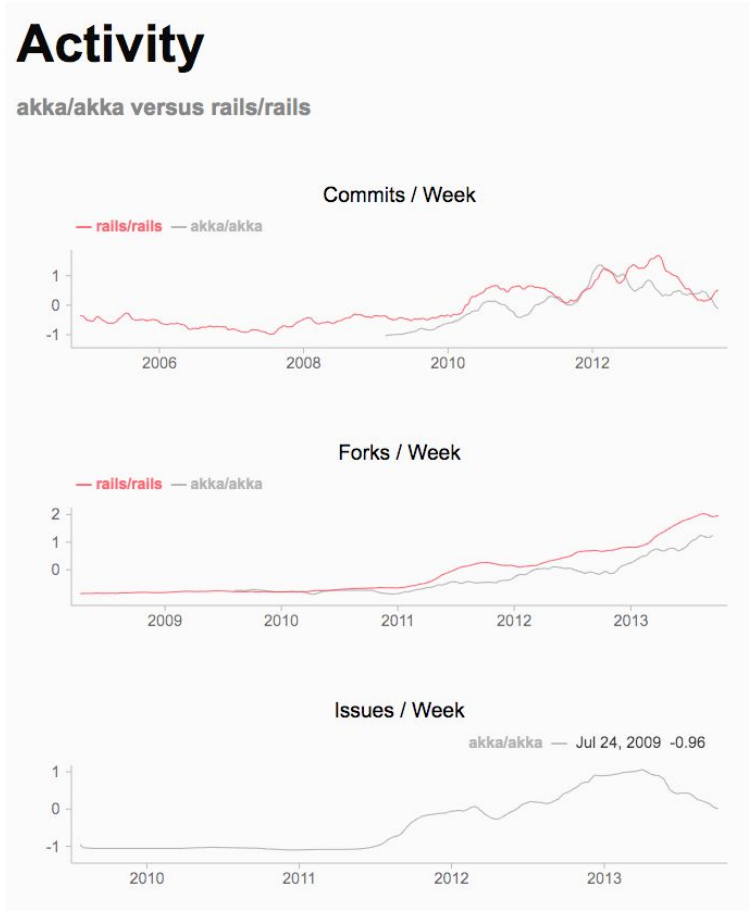
Augur

Prototyping Human Centered Metrics:
Enable Comparisons, Make Trends Central to the Use Experience







https://github.com/CHAOSS/augur

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Augur

Integrating DoSOCSv2 for License Risk Assessment and Management
Integrating Facade for Consistent Git Repository Mining

https://github.com/DoSOCSv2/DoSOCSv2

https://github.com/brianwarner/facade

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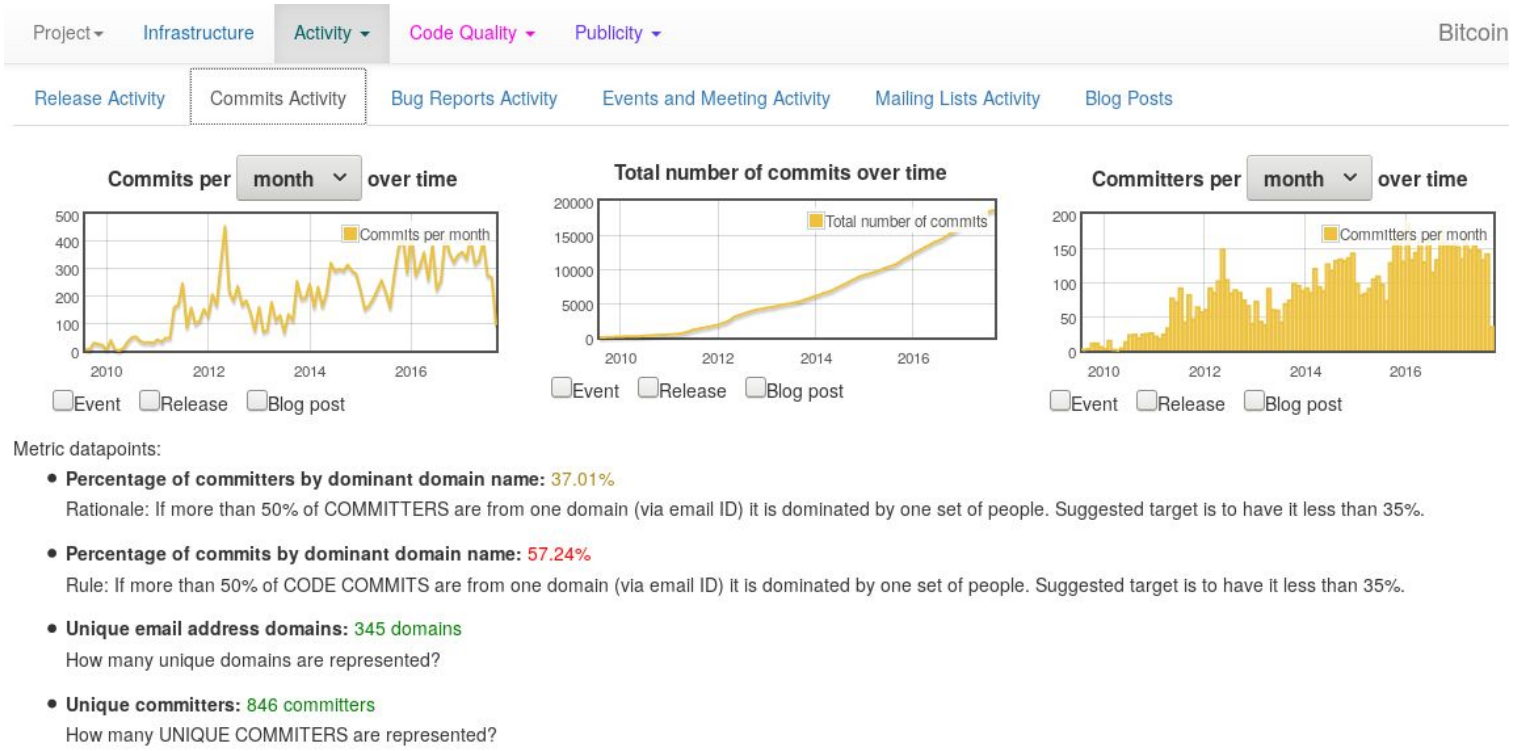
Prospector



https://github.com/chaoss/prospector

- Provides an objective, consistent and repeatable set of metrics of projects for success, sustainability and vibrancy.
- These can then coherently help assess and track continuously open source projects, which in turn would help drive the evolution of projects

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cregit

- Git-blame tracks changed lines, not tokens
  - Last person who modified part of a line, becomes “contributor” of the entire line
  - Cregit is capable of tracking the contributor of each token in a line
- In Linux Kernel (cregit.linuxsources.org):
  - blame per line is accurate in 75%
  - blame per token (using cregit) is accurate 95%
  - Results based on statistical sampling and manual analysis, with 95% reliability with +/-5% of error

github.com/cregit

Live Examples to Explore

Augur:

twitter.augurlabs.io

GrimoireLab:

opnfv.biterg.io

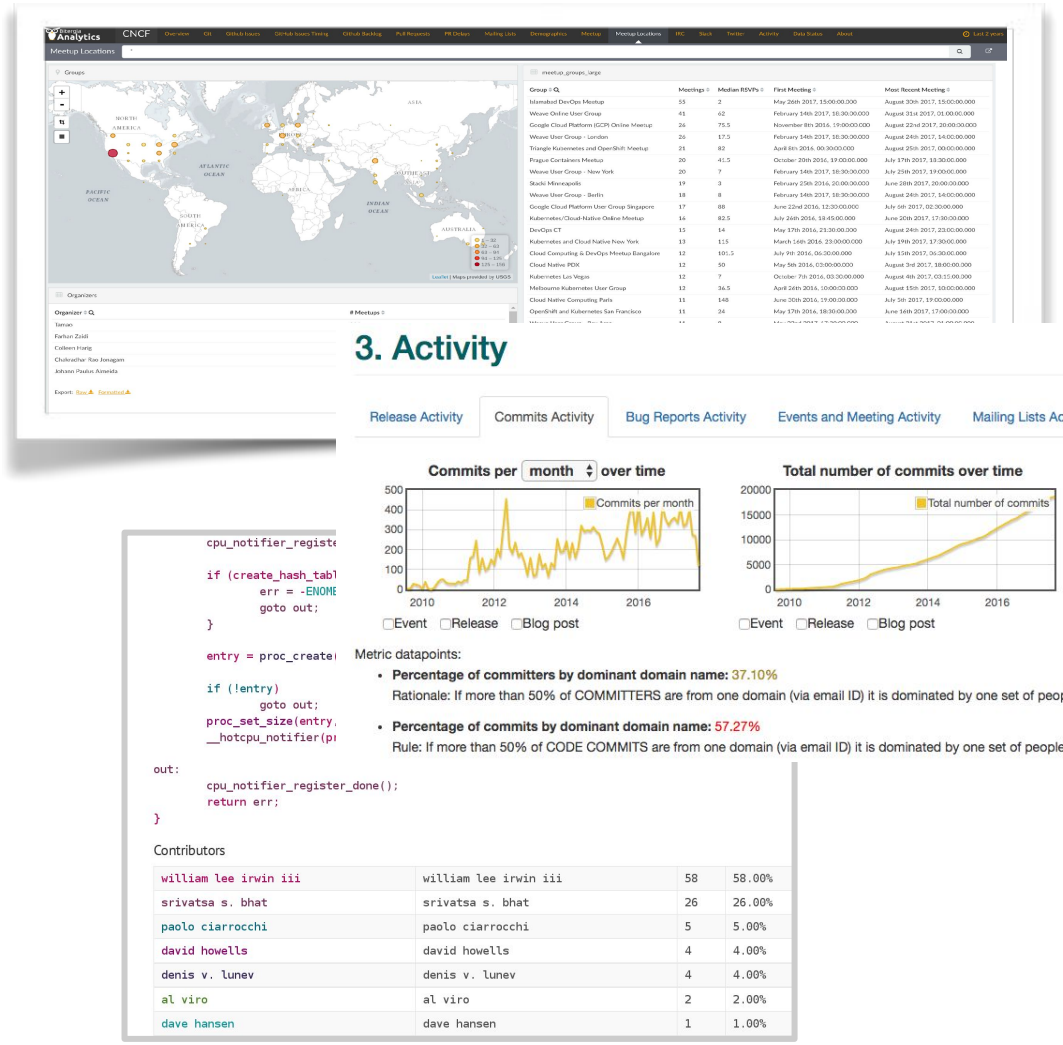
cauldron.io

Prospector:

prospector.bitergia.net

Cregit:

cregit.linuxsources.org



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Getting Engaged with the CHAOSS Community

Mailing lists, IRC Channels and Meetings:

1. https://chaoss.community/participate/
2. IRC Channel: #chaoss-community on freenode
3. 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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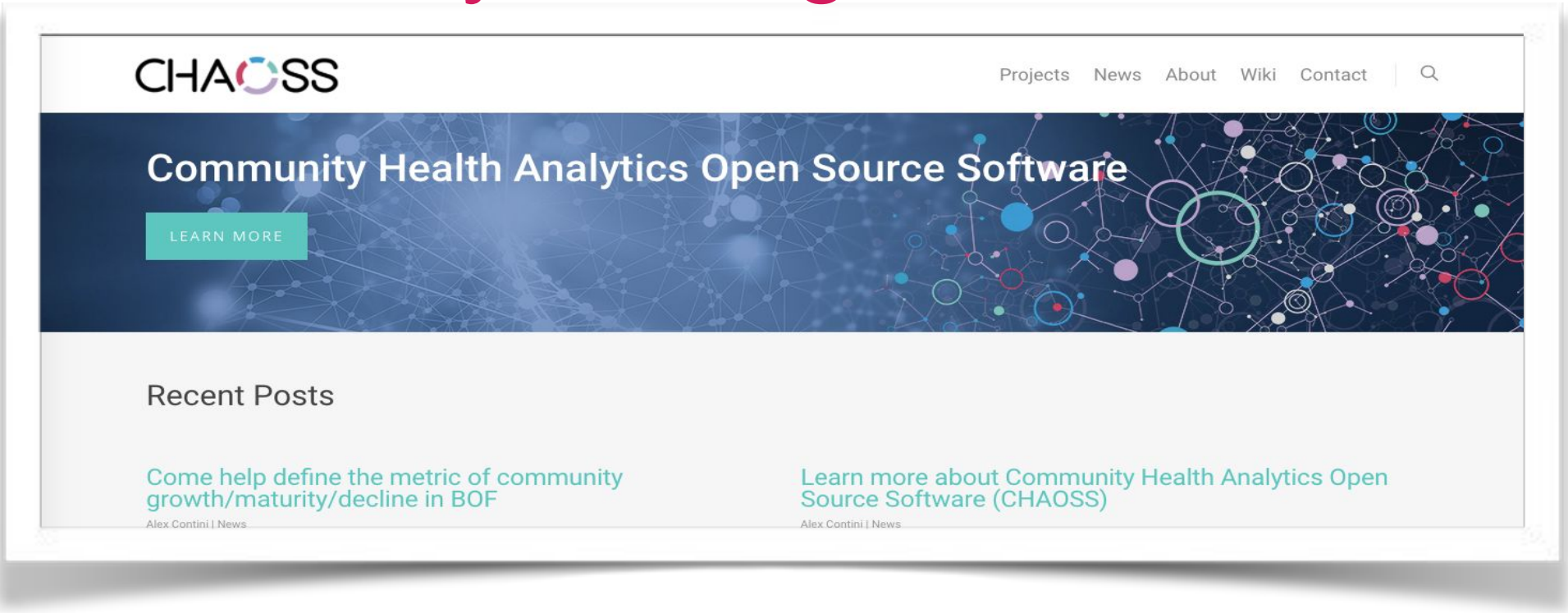
Community starting to form...



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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Project Updates

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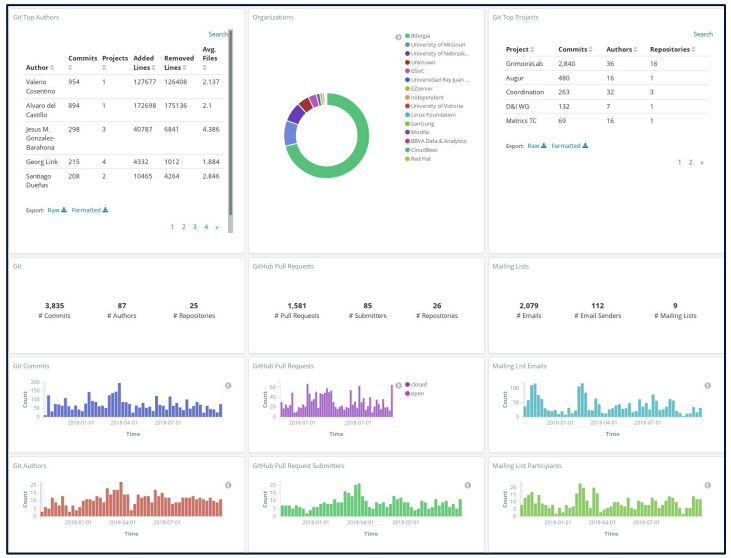

Project metrics about CHAOSS available at: https://chaoss.biterg.io

- Inaugural CHAOSScon NA in August was sold out, videos of the sessions were available September, and blog post about the event contributed by VMware.
- Metrics from Growth-Maturity-Decline groups have started being adopted into Software Projects (Augur, Grimoire Lab - both of which growing in functionality, user base, and new contributors :-))
- Working Group for Diversity & Inclusion has two talks planned for OSS-EU (Metrics that Matter for Diversity & Inclusion in Open Source , Tutorial: How to Prepare a Diversity and Inclusion Report for your Community) and new mail list has been set up for refining the metrics.
- Working Group for Risk is in initial stages of organization and will incorporate License Scanning into the CHAOSS Toolkit.
- CHAOSS community meetings being posted on CHAOSS YouTube channel
- Participated in the 2018 GSoC - 2 students and presented *Ecosystem and Community Health* at the GSoC Googler Track at the Mentor Summit
- CFP for CHAOSSCon EU is open until Nov 26 (will be on Feb 1, prior to FOSDEM).

Join us to extract knowledge from

chaoss.community

License & Credits

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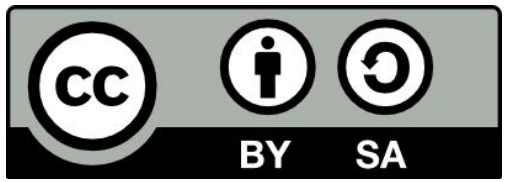

Credits:

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

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