Managing community backlog with the help of metrics

CHAOSScon Europe 2020

Alberto Pérez García-Plaza (Bitergia): @alpgarcia
Ray Paik (GitLab): @rspaik

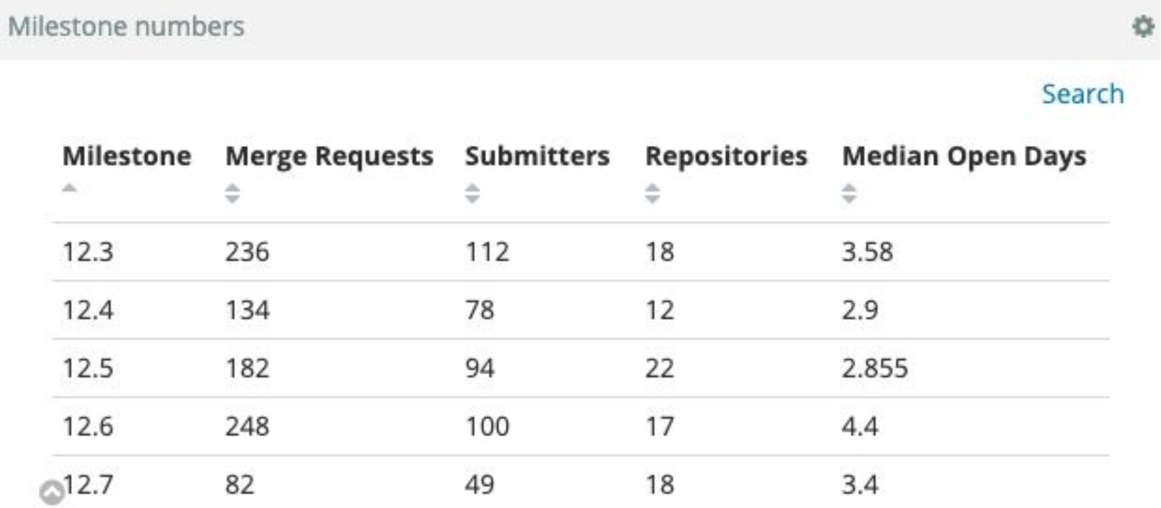
Agenda

- Responding to community contributions
- How are we looking at the community backlog for Merge Requests (MRs) at GitLab?
- GrimoireLab Backlog implementation
- GrimoireLab: Use case analysis
- Evolution of GrimoireLab dashboard

Responding to community contributions

One way of looking at responsiveness:

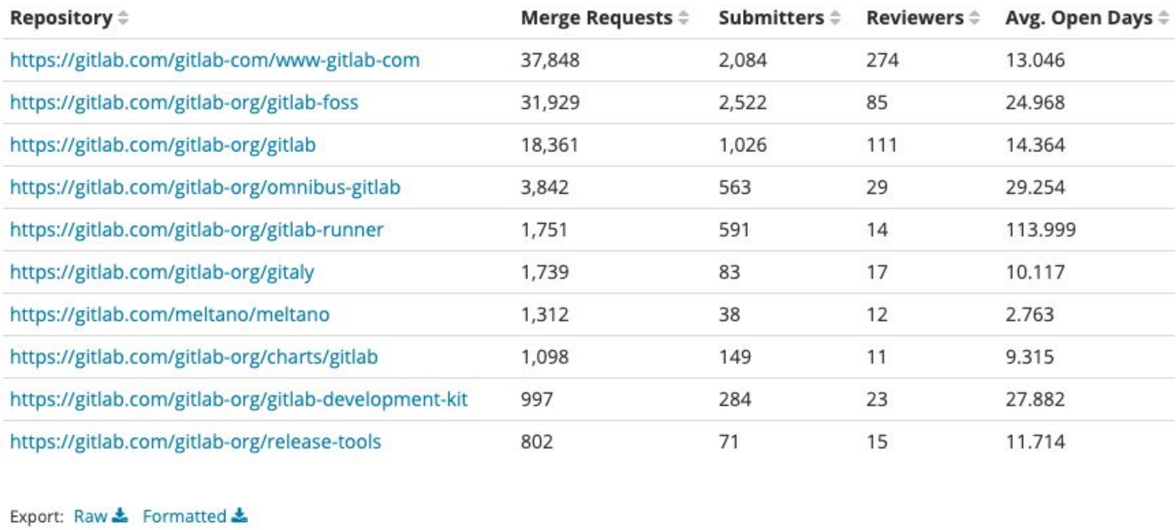
Number of days that merge requests are open



Milestone numbers

Search

Milestone	Merge Requests	Submitters	Repositories	Median Open Days
12.3	236	112	18	3.58
12.4	134	78	12	2.9
12.5	182	94	22	2.855
12.6	248	100	17	4.4
12.7	82	49	18	3.4



Repository	Merge Requests	Submitters	Reviewers	Avg. Open Days
https://gitlab.com/gitlab-com/www-gitlab-com	37,848	2,084	274	13.046
https://gitlab.com/gitlab-org/gitlab-foss	31,929	2,522	85	24.968
https://gitlab.com/gitlab-org/gitlab	18,361	1,026	111	14.364
https://gitlab.com/gitlab-org/omnibus-gitlab	3,842	563	29	29.254
https://gitlab.com/gitlab-org/gitlab-runner	1,751	591	14	113.999
https://gitlab.com/gitlab-org/gitaly	1,739	83	17	10.117
https://gitlab.com/meltano/meltano	1,312	38	12	2.763
https://gitlab.com/gitlab-org/charts/gitlab	1,098	149	11	9.315
https://gitlab.com/gitlab-org/gitlab-development-kit	997	284	23	27.882
https://gitlab.com/gitlab-org/release-tools	802	71	15	11.714

Export: Raw Formatted

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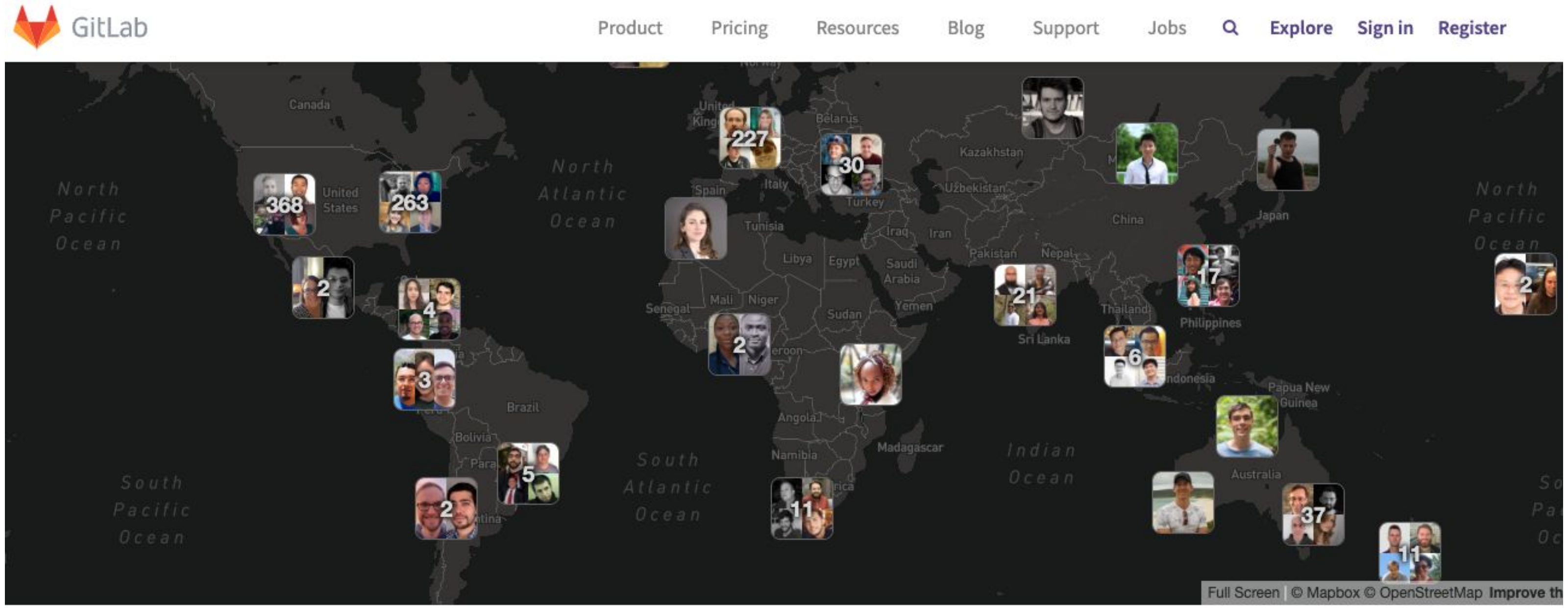
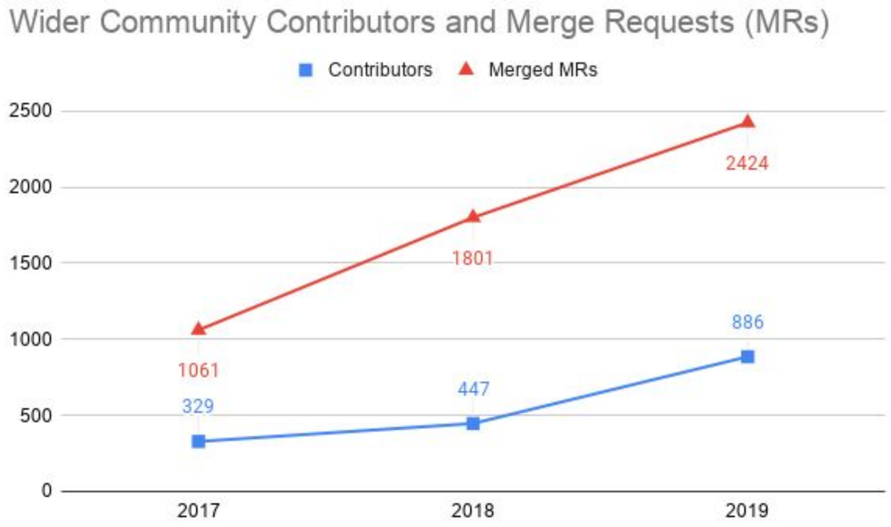
We also wanted to look at the backlog as the community grew...

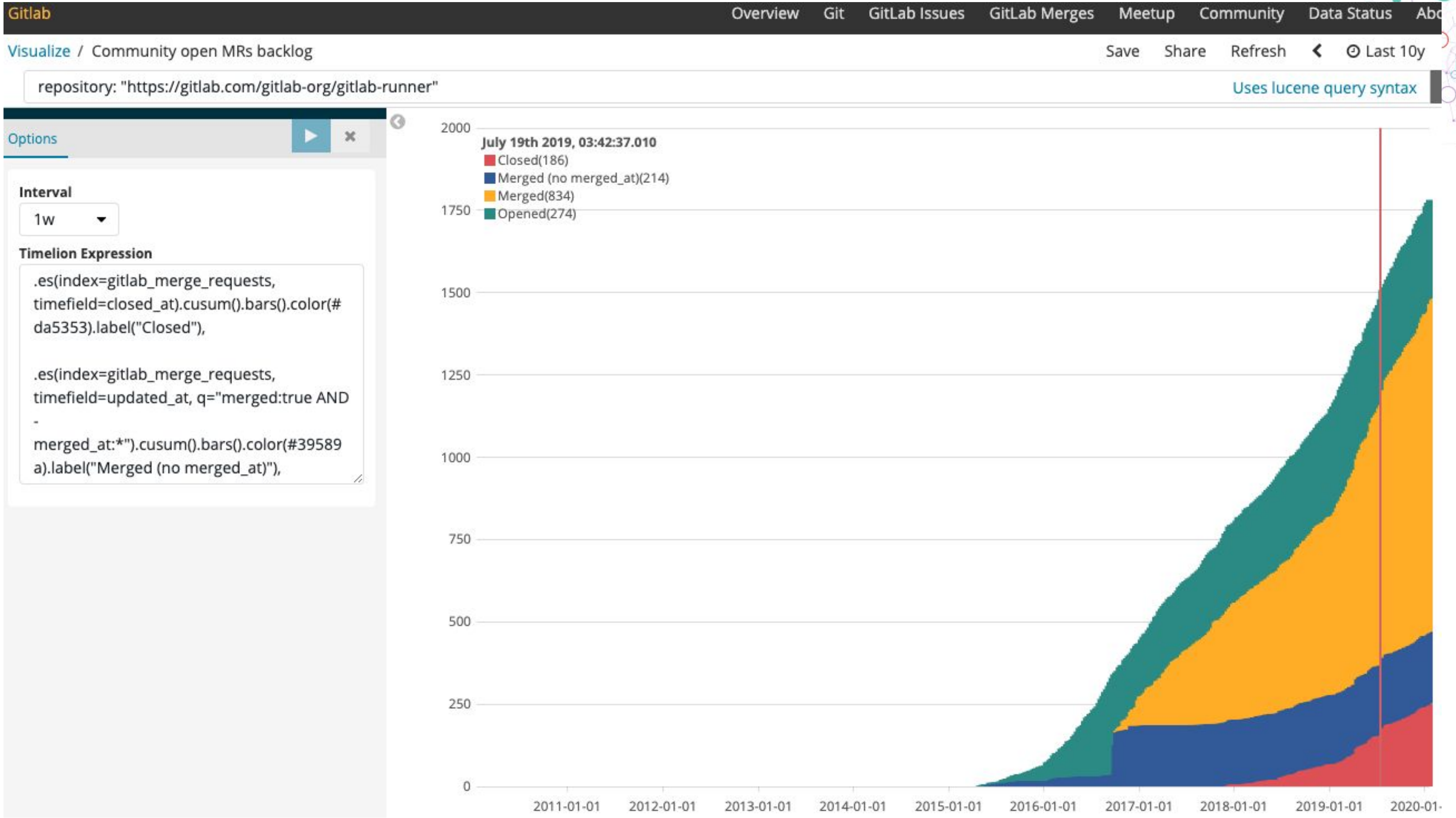


MEET OUR **TEAM**

More than 2,000 people have contributed to GitLab. The GitLab Inc. team consists of the following **1125 team members** and their 274+ pets. We're an all remote organization and we currently have team members in 65 countries and regions. This page lists who people report to, and on a separate page we detail the organizational structure and organization chart. You can get a sense of the team culture by visiting our culture page.



Looking at community backlog



repository: "https://gitlab.com/gitlab-org/gitlab-runner"

Interval: 1w

Timelion Expression

```
.es(index=gitlab_merge_requests,
timefield=closed_at).cusum().bars().color(#
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a).label("Merged (no merged_at)"),
```

July 19th 2019, 03:42:37.010

- 🟥 Closed(186)
- 🟦 Merged (no merged_at)(214)
- 🟧 Merged(834)
- 🟩 Opened(274)

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Alberto Pérez García-Plaza

You **may** remember me from talks such as "**Creating a Collection of Panels**" or "**I have a GrimoireLab dashboard. Now, what?**"

Member of Bitergia Consultancy Team
@alpgarcia

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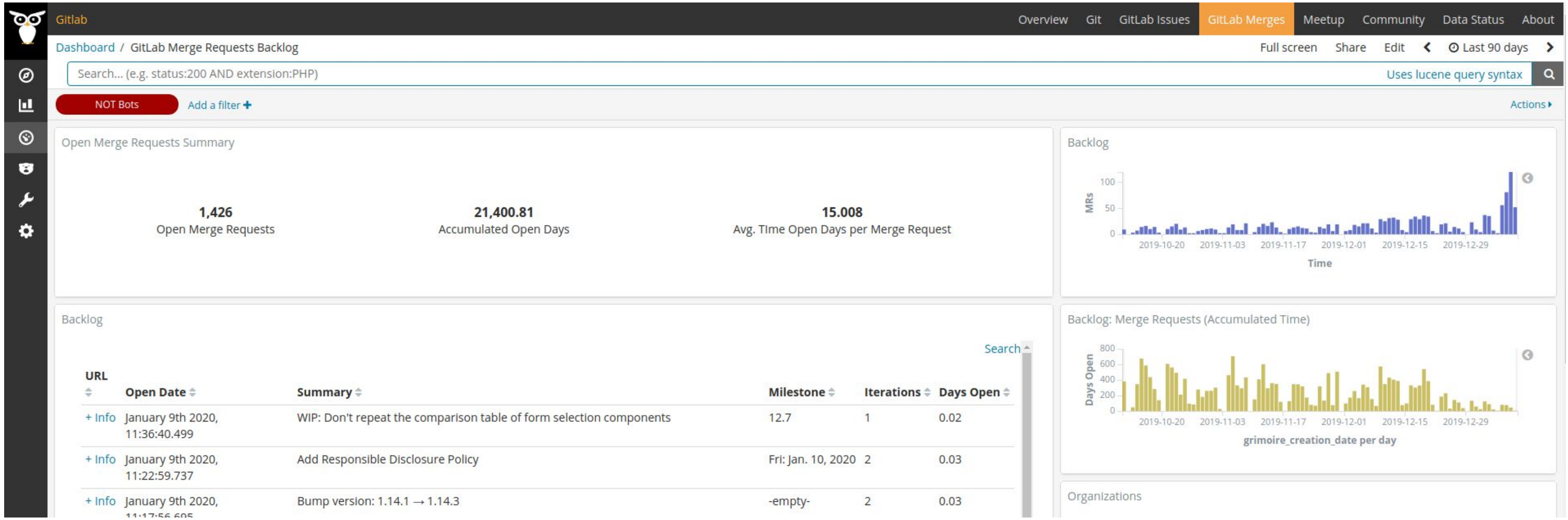
GrimoireLab Backlog Implementation

GL Backlog dashboards are based on **what remains open**.



Open Merge Requests Summary

1,426	21,400.81	15.008
Open Merge Requests	Accumulated Open Days	Avg. Time Open Days per Merge Request

Backlog

Search

URL	Open Date	Summary	Milestone	Iterations	Days Open
+ Info	January 9th 2020, 11:36:40.499	WIP: Don't repeat the comparison table of form selection components	12.7	1	0.02
+ Info	January 9th 2020, 11:22:59.737	Add Responsible Disclosure Policy	Fri: Jan. 10, 2020	2	0.03
+ Info	January 9th 2020, 11:17:56.695	Bump version: 1.14.1 → 1.14.3	-empty-	2	0.03

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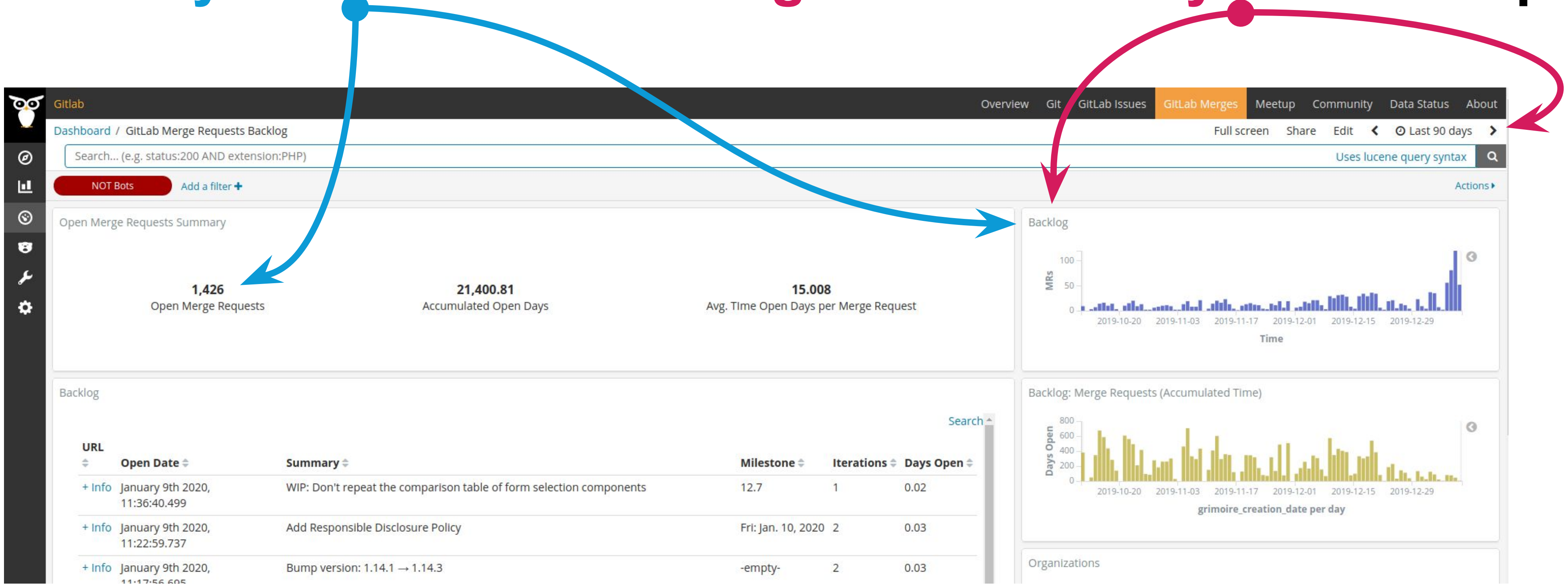
GrimoireLab Backlog Implementation

How many items created during the last 90 days are still open?



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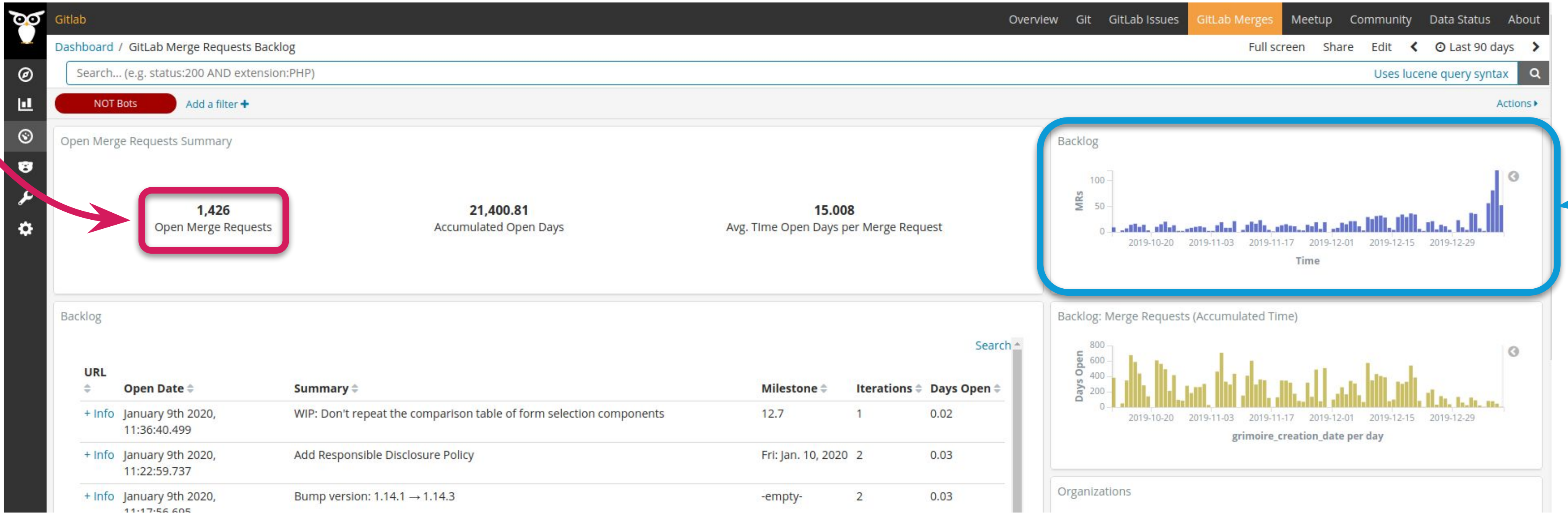
GrimoireLab Backlog Implementation

These items were created on these dates

...and **remain open**



Gitlab

Overview | Git | GitLab Issues | GitLab Merges | Meetup | Community | Data Status | About

Dashboard / GitLab Merge Requests Backlog

Full screen | Share | Edit | Last 90 days

Search... (e.g. status:200 AND extension:PHP) | Uses lucene query syntax

NOT Bots | Add a filter | Actions

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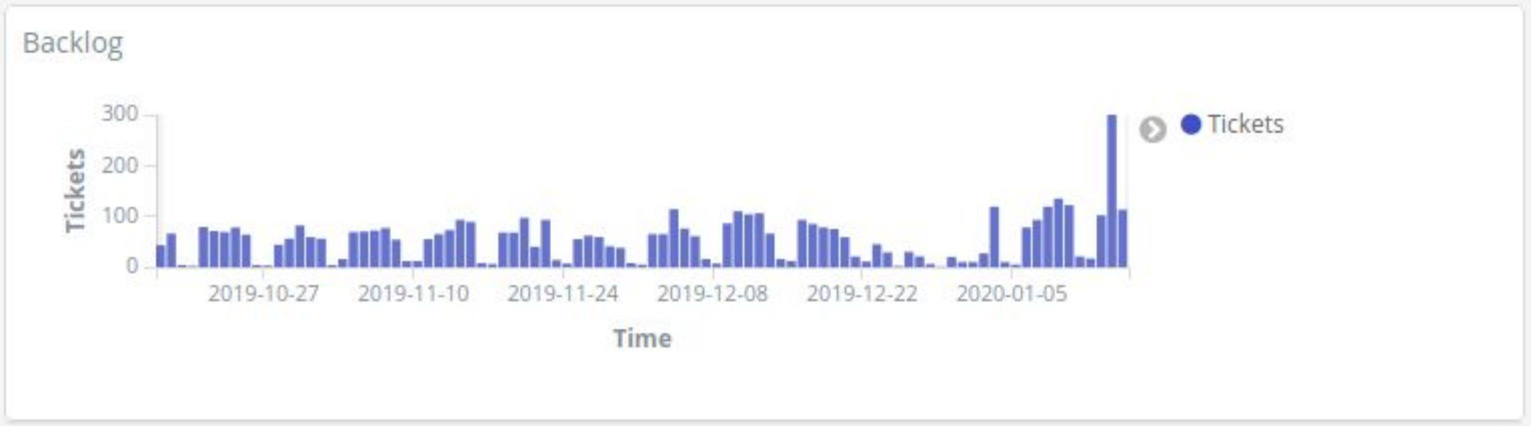
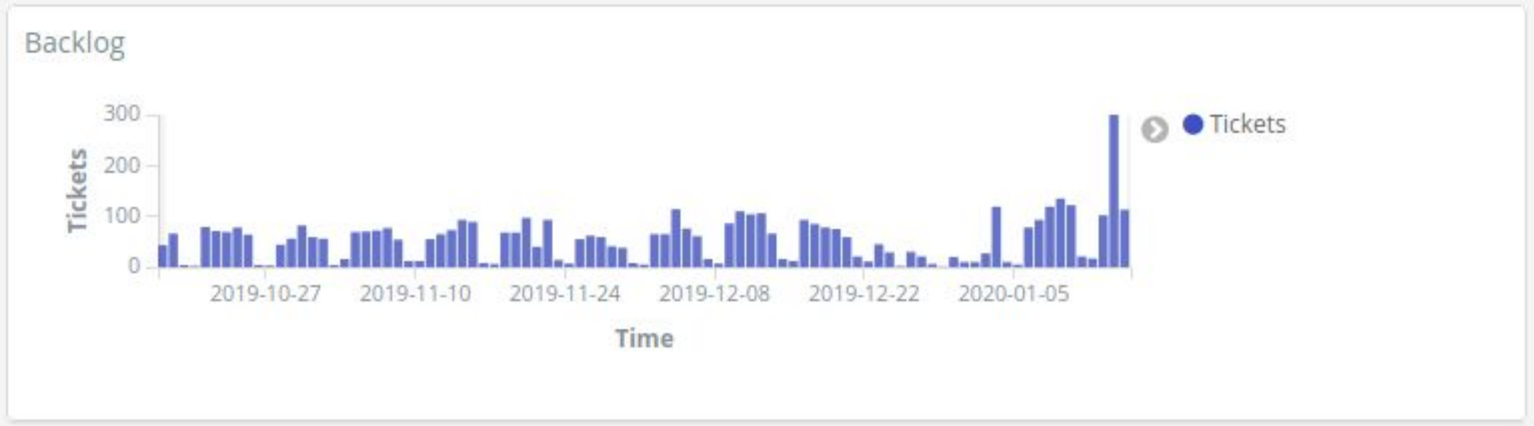
GrimoireLab: Use Case Analysis



Limitations. **It doesn’t allow analyzing the backlog**

- **Backlog evolution over time**.
- **Backlog status at specific time frames**.

GrimoireLab: Use Case Analysis



In short, offers a view based on the present status:

How many items created during the last 90 days are **still open**?

GrimoireLab: Use Case Analysis

GitLab user #1

GitLab user #2

I saw we are progressing closing tasks
But the filter only shows open tasks at the moment
imgflip.com

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GrimoireLab: Use Case Analysis

GitLab users

You told us you were closing tasks
But not when
imgflip.com

Me
(hard wip)

GrimoireLab: Use Case Analysis

Then, how can we look for **past** MRs **state**?

GrimoireLab: Use Case Analysis

- Current approaches:
  - **We relied on Timelion** to solve this with **current data model**:
    - Each Item contains **creation** and **closing/merging** dates.
    - We need to count it between both dates.
  - A recent **community proposed approach** is based on a **new study and index**:
    - https://github.com/chaoss/grimoirelab-elk/issues/761
    - New index with number of opened issues per project, origin and labels.

GrimoireLab: Use Case Analysis

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    - https://github.com/chaoss/grimoirelab-elk/issues/761
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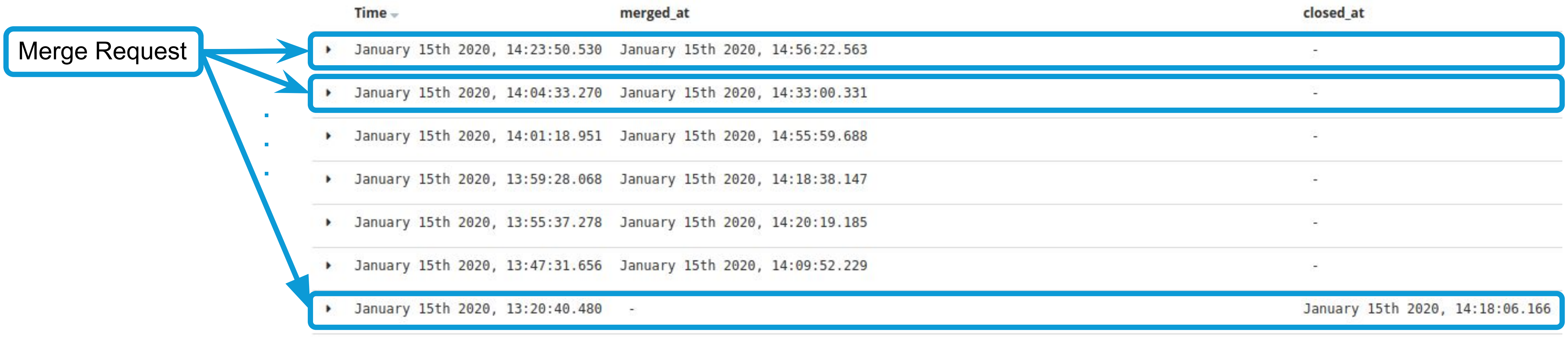
GrimoireLab: Use Case Analysis

- Challenges:
  - **We relied on Timelion** to solve this with **current data model**:
    - Each Item contains **creation** and **closing/merging** dates.
    - We need to count it between both dates.



Merge Request

Time	merged_at	closed_at
January 15th 2020, 14:23:50.530	January 15th 2020, 14:56:22.563	-
January 15th 2020, 14:04:33.270	January 15th 2020, 14:33:00.331	-
January 15th 2020, 14:01:18.951	January 15th 2020, 14:55:59.688	-
January 15th 2020, 13:59:28.068	January 15th 2020, 14:18:38.147	-
January 15th 2020, 13:55:37.278	January 15th 2020, 14:20:19.185	-
January 15th 2020, 13:47:31.656	January 15th 2020, 14:09:52.229	-
January 15th 2020, 13:20:40.480	-	January 15th 2020, 14:18:06.166

GrimoireLab: Use Case Analysis

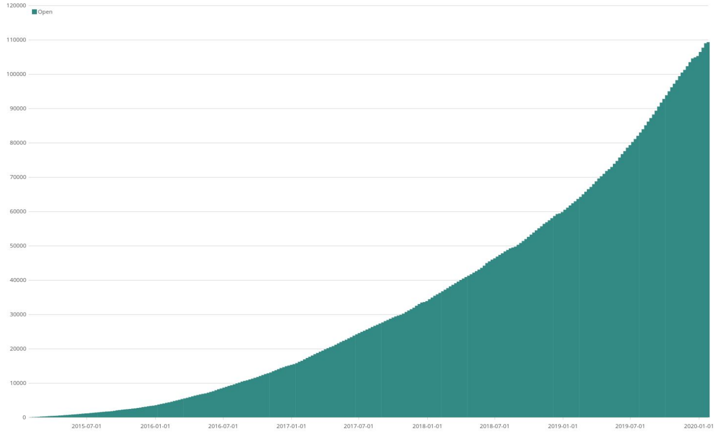
- Proposed solution:
  - Cumulative sum of:
    - Items as they are created.
    - Subtract closed/merged from created ones.
    - Some items have no merged date: they were merged before the field even existed. We need to subtract them too.

GrimoireLab: Use Case Analysis

- **Cumulative sum** of items **as they are created**.

```
.es(index=gitlab_merge_requests,timefield=created_at)
.cusum()
.bars().color(#338984).label("Open")
```

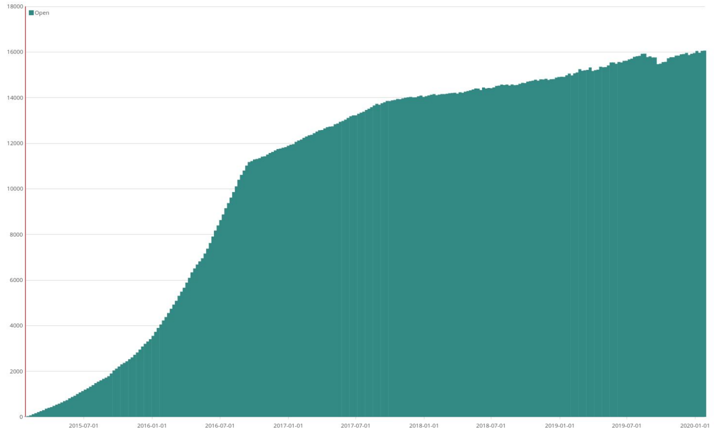
...we are still ignoring when they were closed/merged



GrimoireLab: Use Case Analysis

- Subtract **closed**/**merged** from created ones.

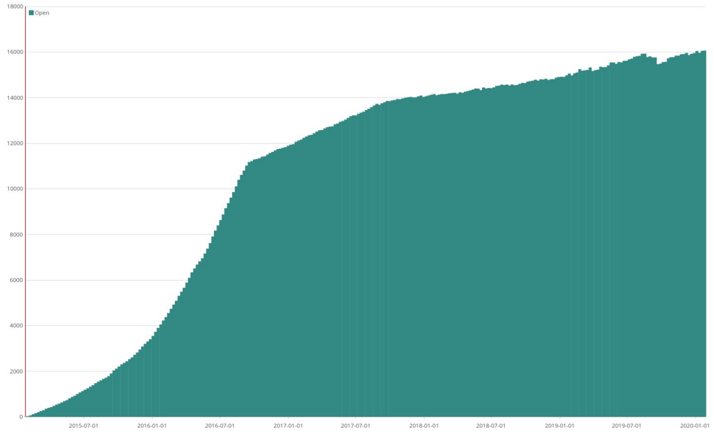
```
.es(index=gitlab_merge_requests, timefield=created_at)
.subtract(.es(index=gitlab_merge_requests, timefield=closed_at))
.subtract(.es(index=gitlab_merge_requests, timefield=merged_at))
.cusum().bars().color(#338984).label("Open")
```



GrimoireLab: Use Case Analysis

- Subtract closed/merged from created ones.

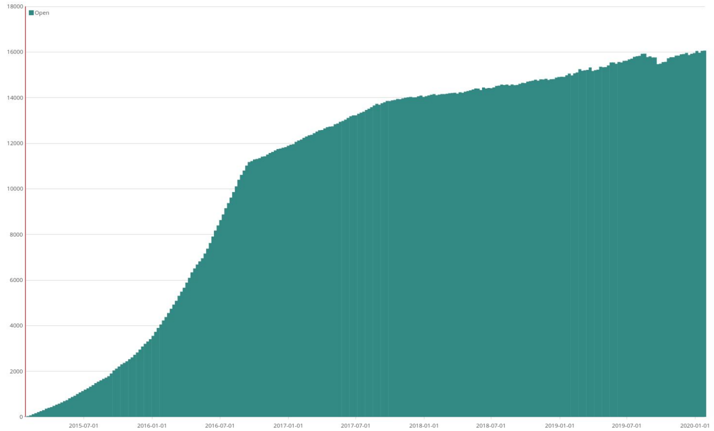
MR State	t_1	t_2	t_3	t_4
open	4			
closed/merged	0			
subtraction	4			
cusum	4			



GrimoireLab: Use Case Analysis

- Subtract closed/merged from created ones.

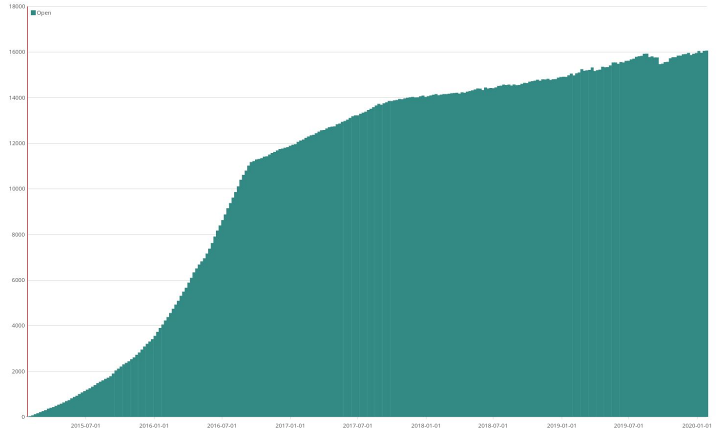
MR State	t_1	t_2	t_3	t_4
open	4	3		
closed/merged	0	2		
subtraction	4	1		
cusum	4	5		



GrimoireLab: Use Case Analysis

- Subtract closed/merged from created ones.

MR State	t_1	t_2	t_3	t_4
open	4	3	1	1
closed/merged	0	2	3	1
subtraction	4	1	-2	0
cusum	4	5	3	3



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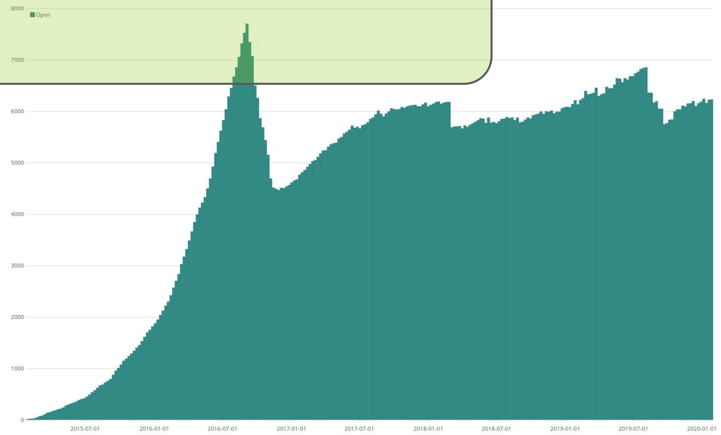
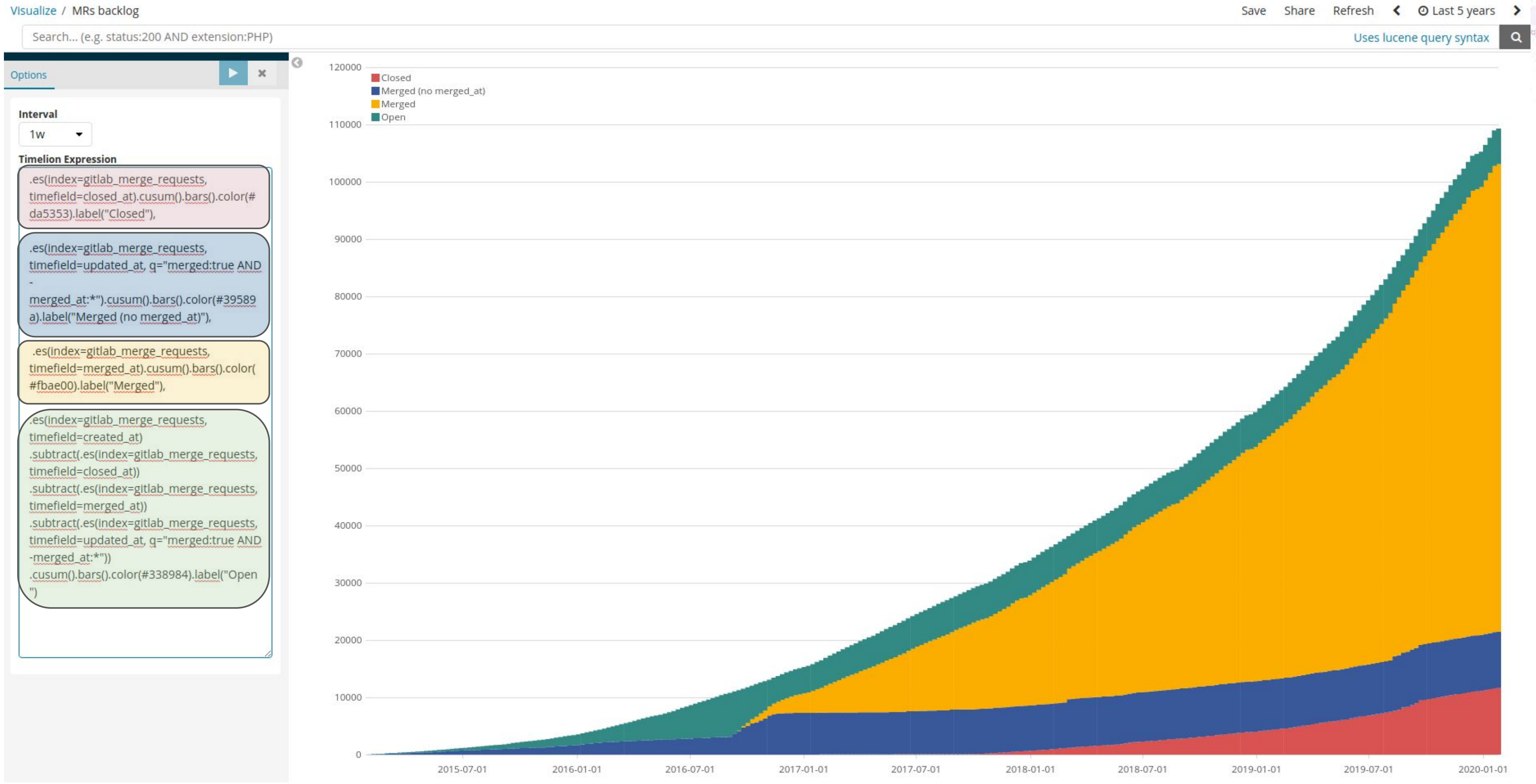
GrimoireLab: Use Case Analysis

- Subtract **items with no merged_at date** from created ones.

```
.es(index=gitlab_merge_requests, timefield=created_at)
.subtract(.es(index=gitlab_merge_requests, timefield=closed_at))
.subtract(.es(index=gitlab_merge_requests, timefield=merged_at))
.subtract(.es(index=gitlab_merge_requests, timefield=updated_at,
q="merged:true AND -merged_at:*"))
.cusum().bars().color(#338984).label("Open")
```



GrimoireLab: Use Case Analysis



Interval: 1w

Timelion Expression

```
.es(index=gitlab_merge_requests,
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da5353).label("Closed"),

.es(index=gitlab_merge_requests,
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-
merged_at:*").cusum().bars().color(#39589
a).label("Merged (no merged_at)"),

 .es(index=gitlab_merge_requests,
timefield=merged_at).cusum().bars().color(
#fbae00).label("Merged"),

.es(index=gitlab_merge_requests,
timefield=created_at)
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.subtract(.es(index=gitlab_merge_requests,
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```

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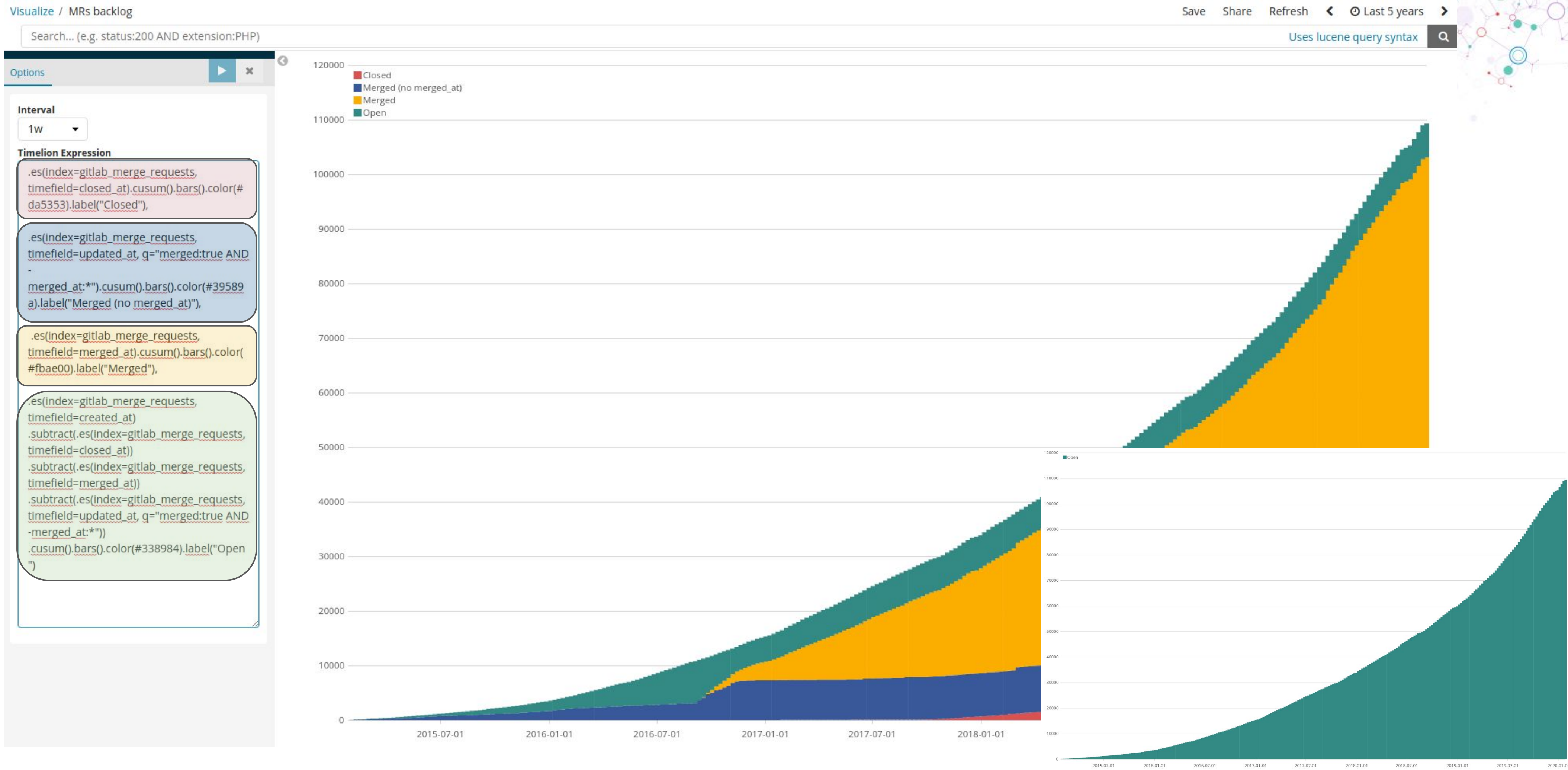
GrimoireLab: Use Case Analysis



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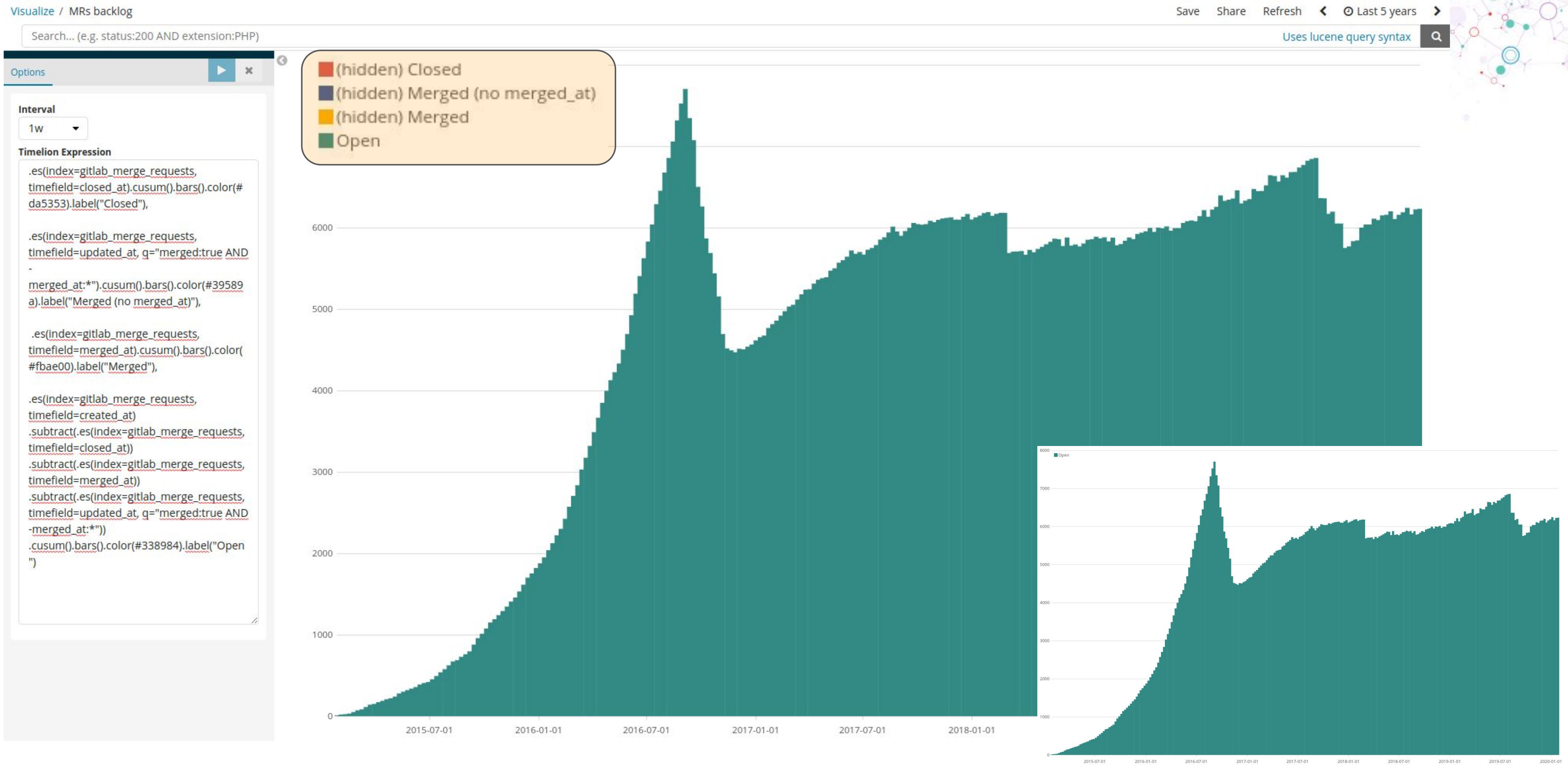
GrimoireLab: Use Case Analysis



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.cusum().bars().color(#338984).label("Open
")
```

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Evolution of GrimoireLab Dashboard

- We started by solving the use case with custom visualizations.
- All information is publicly available[1]. Anyone can reproduce the visualization on top of GrimoireLab data.
- **WIP**: Sigils project will include specific dashboards[2].
- This is the ideal case we would like to see:
  - **GrimoireLab evolving towards metrics requested by the community.**

[1] https://gitlab.com/Bitergia/c/gitlab/support/issues/31

[2] https://github.com/chaoss/grimoirelab-sigils/issues/410

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