

Standard Grimoire Report
OPNFV Project
19-Q1



May 14, 2019

This report would not exist without the effort of the people involved in the development of the Grimoire toolset.

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Executive Summary

This report provides a quantitative analysis of the current and past situation of the OPNFV project. All the data presented in it is based on information retrieved from the software development repositories of the project. The analysis includes a summary of the general situation of the project, and specific analysis of some of its development processes and communication channels. Data from previous periods is also shown for comparison.

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1 Project overview

The report looks at activities across the OPNFV community during 19-Q1 (2019-01-01 to 2019-03-31), comparing it to previous period of analysis.

Data source	Activity last quarter	Change (wrt to prev. quarter)
mailing lists	539 Sent Emails	-23%
gerrit	939 Closed reviews	-68%
gerrit	1036 Submitted reviews	-69%
jira_issues	66 Closed tickets	-357%
jira_issues	117 Opened tickets	-226%
git	1127 Commits	-119%

Table 1: Activity during the last period of analysis and its evolution

Table 1 shows development activity for each of the analyzed data sources. The activity column displays information about the net activity numbers, while the Change column displays information about the relative difference with respect to the previous period of analysis.

Gerrit data offers an interesting view on how software development process of OPNFV community is working from the point of view of efficiency and process. To analyze this, some metrics based on Gerrit changesets and reviews are presented below. In terms of Gerrit terminology, these metrics are calculated as follows:

- Review Efficiency Index (REI), measured as the number of closed changesets out of the new ones in a given period.
- Time to Merge (TTM), measured as the time since a review is submitted until this is closed.

REI	TTM
0.91	0.70 days

Table 2: Closed out of opened changesets (REI) and median time to merge (TTM)

The rest of the document is divided into three sections with information from the last periods:

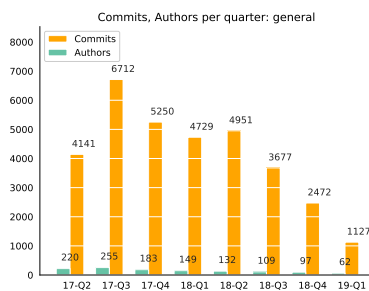
- Activity: focused on contributions.

- Community: focused on contributors.
- Process: focused on efficiency and timing.

2 Activity

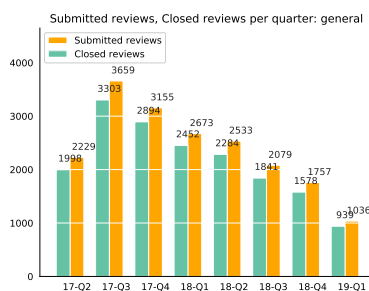
This section covers contributions in the different data sources.

The bar chart below shows the evolution of the number of commits and authors in Git through time, grouped by quarters.



Period	Commits	Authors
17-Q2	4141	220
17-Q3	6712	255
17-Q4	5250	183
18-Q1	4729	149
18-Q2	4951	132
18-Q3	3677	109
18-Q4	2472	97
19-Q1	1127	62

Following chart shows activity in Gerrit data source. It is based on comparing the number of opened and closed reviews grouped by quarters.

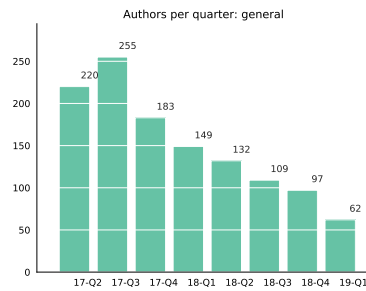


Period	Opened	Closed
17-Q2	2229	1998
17-Q3	3659	3303
17-Q4	3155	2894
18-Q1	2673	2452
18-Q2	2533	2284
18-Q3	2079	1841
18-Q4	1757	1578
19-Q1	1036	939

3 Community

This section tries to help us to understand the evolution of OPNFV community by looking at active contributors and organizations in the last period of analysis, compared to previous ones.

Number of active authors in Git is shown below, giving us a quick look of contributors evolution in the last quarter compared to previous ones.



Period	Active Authors
17-Q2	220
17-Q3	255
17-Q4	183
18-Q1	149
18-Q2	132
18-Q3	109
18-Q4	97
19-Q1	62

In addition, table below offers a quick glance to the most active authors in Git in the whole period of time shown in the bar chart above.

Author	Commit (s)
Cedric Ollivier	541
Alexandru Avadanii	88
Parker Berberian	43
Stamatis Katsaounis	34
Trevor Bramwell	33
Aric Gardner	27
Michael Polenchuk	27
Dan Xu	22
Sawyer Bergeron	21
Tim Rozet	21
Cristina Pauna	17
Juha Kosonen	13
Manuel Buil Mur	13
John O Loughlin	12
Xavier Simonart	12
Fatih Degirmenci	11
Stepan Andrushko	11
Stephen Wong	10
Bin Hu	9
Emma Foley	9

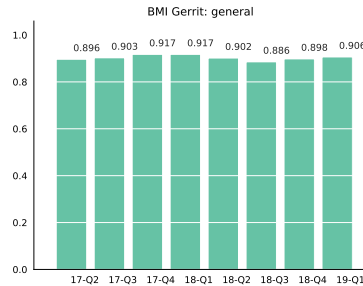
In a similar way, table below shows the same information groped by organization instead of author.

Organization	Commit (s)
Orange	544
Unknown	124
Intel	120
ENEA AB	105
Linux Foundation	64
Huawei	53
Mirantis	27
Ericsson	25
Red Hat	23
Nokia	20
AT&T	9
Cisco	4
China Mobile	2
HCL	2
ZTE Corporation	2
ARM	1
CableLabs	1
NEC	1

4 Process

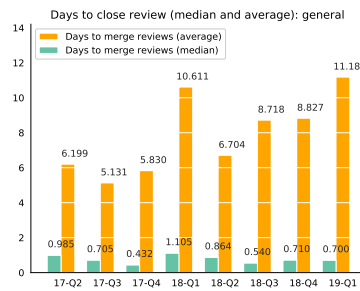
This section intends to show the evolution of efficiency and timing when dealing with tasks related with code review processes.

For Gerrit data source, we use REI, that was defined in section 1, to measure the efficiency in code review process. Chart below shows evolution of REI by quarters in order to visualize how changesets are being managed by the community.



Period	Closed/Subm.
17-Q2	0.90
17-Q3	0.90
17-Q4	0.92
18-Q1	0.92
18-Q2	0.90
18-Q3	0.89
18-Q4	0.90
19-Q1	0.91

In terms of time and again for Gerrit, chart below shows the evolution of mean and median times—in days—to close a review (TTM, defined in section 1).



Period	Median	Mean
17-Q2	0.98	6.20
17-Q3	0.71	5.13
17-Q4	0.43	5.83
18-Q1	1.10	10.61
18-Q2	0.86	6.70
18-Q3	0.54	8.72
18-Q4	0.71	8.83
19-Q1	0.70	11.18

A Metrics Definitions

- **Commit:** this is defined as the action(s) that performs a change in the source code. Bots, merges and other type of automatic activity is removed from the records. In addition, when aggregating several git repositories, this metric only counts unique revisions (unique hashes found in the git repositories). In addition, all branches are aggregated to the analysis.
- **Submitted changesets:** a code review is the process of peer reviewing source code changes. A submitted code is not merged to the master code of a given project till this is approved. A submitted code review is defined as any changeset submitted to the Gerrit system.
- **Authors:** a developer is defined as author if she is the owner of the patchset sent for reviewing and this is merged into the source code.

As previously indicated, automatic commits such bot's are removed from this analysis.

- Efficiency closing changesets: this metric is a derivation of the Backlog Management Index as it is named as Review efficiency index (REI). As similarly used in the BMI index, this metrics measures the number of closed changesets out of the total number of new changesets in a given period.
- Time to Merge: this time consists of the time between the first upload of the first changeset till the last iteration of the code review process is merged into the code. This metric is provided in number of days.
- Developer per period: average of developers per period ignoring bots and merges.
- Emails sent: number of emails sent by people to the several mailing lists. Bots are not registered.
- People sending emails: number of people sending those emails ignoring bots.