

Standard Grimoire Report
OPNFV Project
18-Q4



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 18-Q4 (2018-10-01 to 2018-12-31), comparing it to previous period of analysis.

Data source	Activity last quarter	Change (wrt to prev. quarter)
jira_issues	302 Closed tickets	-35%
jira_issues	382 Opened tickets	-32%
gerrit	1578 Closed reviews	-16%
gerrit	1757 Submitted reviews	-18%
git	2472 Commits	-48%
mailing lists	665 Sent Emails	-21%

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
0.90	0.71 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:

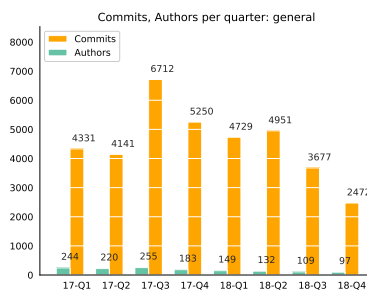
- Activity: focused on contributions.

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

2 Activity

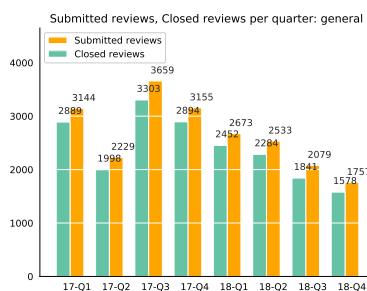
This section covers contributions in the different data sources.

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-Q1	4331	244
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

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

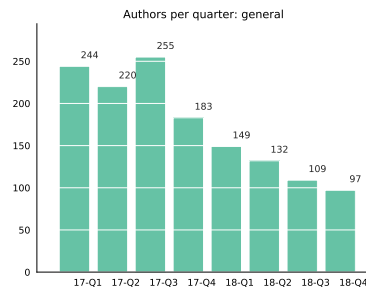


Period	Opened	Closed
17-Q1	3144	2889
17-Q2	2229	1998
17-Q3	3659	3303
17-Q4	3155	2894
18-Q1	2673	2452
18-Q2	2533	2284
18-Q3	2079	1841
18-Q4	1757	1578

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-Q1	244
17-Q2	220
17-Q3	255
17-Q4	183
18-Q1	149
18-Q2	132
18-Q3	109
18-Q4	97

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	381
Trevor Bramwell	313
Tim Rozet	228
Aric Gardner	190
Alexandru Avadani	95
Manuel Buil Mur	66
Abhijit Sinha	61
Emma Foley	54
Eddie Arrage	51
Dan Xu	46
Sofia Wallin	42
Bin Hu	40
Stephen Wong	40
Stamatis Katsaounis	39
huangxiangyu	39
Alec Hothan	35
rexlee8776	32
Radoslaw Jablonski	26
Michael Polenchuk	25
Parker Berberian	24
wenjuan dong	24

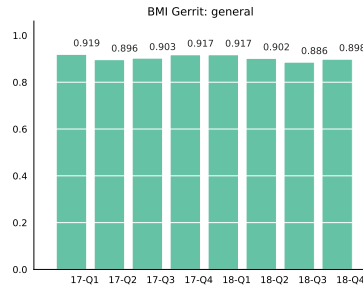
In a similar way, table below shows the same information grouped by organization instead of author.

Organization	Commit (s)
Linux Foundation	503
Orange	392
Intel	375
Huawei	265
Red Hat	255
Unknown	163
ENEA AB	135
Ericsson	135
Nokia	42
AT&T	41
Cisco	36
ZTE Corporation	32
Mirantis	25
Dell	19
NTT DOCOMO	14
China Mobile	13
SUSE	12
ARM	4
CableLabs	4
Freescale	4
NEC	3

4 Process

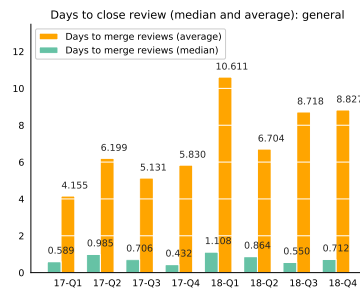
This section intends to show the evolution of efficiency and timing when dealing with tasks related with code review processes.

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-Q1	0.92
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

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-Q1	0.59	4.16
17-Q2	0.98	6.20
17-Q3	0.71	5.13
17-Q4	0.43	5.83
18-Q1	1.11	10.61
18-Q2	0.86	6.70
18-Q3	0.55	8.72
18-Q4	0.71	8.83

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.