

USAGE OF GITHUB'S ISSUE TRACKING SYSTEM

This briefing reports scientific evidence on how GitHub's issue tracking system can support a team during the development of a software project.

FINDINGS

Studies addressing issue tracking systems (ITS) analyze how this tool can support the team during the development of a software project. We have replicated the analyses reported in a former study addressing the ITS offered by the GitHub platform. Following are some results we obtained:

- Few open-source projects use ITS (15% of our sample).
- Even taking only those projects with at least one issue, 86% of our sample have recorded less than 50 issues.
- Larger projects (both in LOC and number of developers) tend to use ITS more extensively. The correlations in the original paper were stronger than what we have found now.
- Projects led by popular developers tend to use ITS more extensively. Correlations were stronger in the former paper.
- Labels are not frequently used and the most common labels refer to automated actions, defects, and task prioritization.
- Issue reporters are typically developers.
- There is a moderate correlation between the number of forks created from a project or the number of developers following its leader and the number of issues reported for the project. This correlation was also stronger in the former paper.
- There are only weak or moderate correlations between the number of reporters in a project, the use of labels, the use of frequently-used labels or the number of comments and the average time required to resolve an issue. These correlations were also stronger in the former paper.
- Developers tend to mark issues as resolved by mentioning them on commits to the version control system. This allows some traceability between the changes made to the code and the issue they resolve. However, few issues are resolved through these means and most of them are related to bugs, new features, and feature enhancements – that is, they are closely related to the source-code!

ENOUGH TALK... SHOW ME THE NUMBERS!

- Approximately 38.000.000 projects on the platform
- 220.000 selected projects
- 76.909 analyzed projects
- 11.662 projects with issues
- 226.340 issues
- 159.118 resolved issues
- 1,54 issues/KLOC
- 304.033 labels
- 2.596 unique labels
- 52% issues with labels
- 2 or 3 labels/issue
- 7.000 issues closed by commit

Who is this briefing for?

Software engineering practitioners who want to make decisions about the use of GitHub issue tracking system based on scientific evidence.

Where the findings come from?

All findings of this briefing were extracted from the experiment replication conducted by Neto et al.

What is included in this briefing?

Evidence from a experiment replication.

What is not included in this briefing?

Results from the original experiment.

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