

Mapping the co-production of digital infrastructure by peer projects and firms

RESEARCH QUESTIONS & METHODS

RQ1: Which firms contribute the most to FOSS projects, which projects receive the most contributions from firms?

Method: Analysis of email addresses of GitHub committers.

RQ2: How does IT media represent firm-project co-production and the issue of unpaid volunteer labour?

Method: Analysis of IT media articles featuring firm and project terms.

RQ3: How do firms communicate towards FOSS projects?

Method: Field ethnography at OS conferences and semantic analysis of firm employee presentation abstracts.

RQ4: How are firm discourses present in projects?

Method: Analysis of firm discourse keywords in project mailing lists.

FIRM CONTRIBUTIONS TO OPEN SOURCE

Key facilitators of firm involvement in OS include GitHub and the Linux Foundation, which celebrates the open source community and communicates firm requirements at trade conferences. Analysing flows of support in our sample of 135 top GitHub repositories showed a minority of projects attracted firm investments and a minority of firms massively contributed. Our analysis of median Source lines of code (figure 1) committed on GitHub shows a dip for employees during the weekend but remains constant for volunteers.

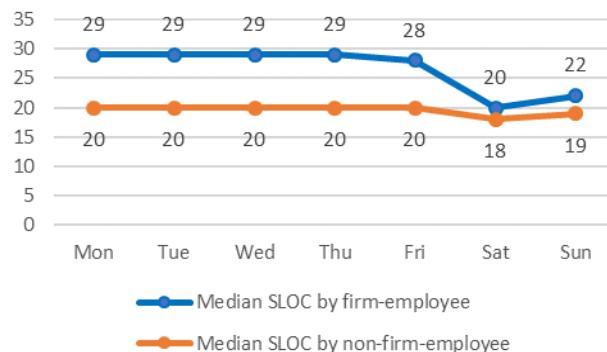


Figure 1. Median SLOC committed by individuals in a week

CENTRALITY OF LINUX

Of the top 20 repositories by firm contributions, only three were community-managed projects. Most top projects are either entirely developed by firms via their employees or managed by industrial consortia. Linux had the highest number of commits in our sample (340.000), 73% of which were authored by firm employees, yet employees of the leading firm (Intel) contributed only 0.07% of commits, showing that contributions are spread out amongst many actors and that community support is high (figure 2).

REPRESENTATION IN IT MEDIA

Free labour is absent from our article subset. Selected articles framed the issue of work in terms of career development and of the existence of a unified firm-project community. The most frequent terms were data and cloud.

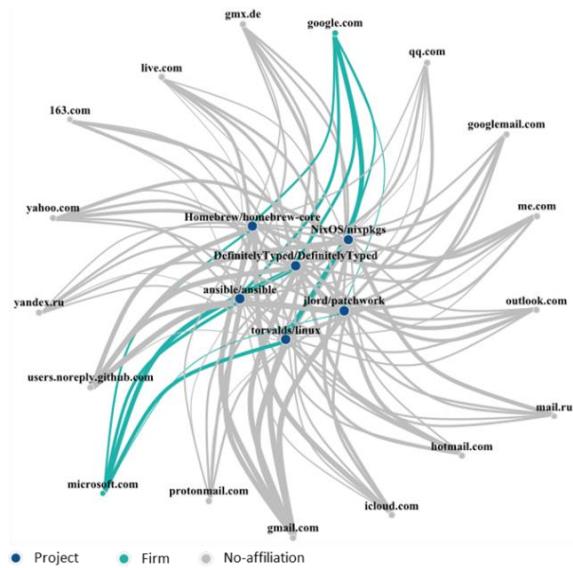


Figure 2. Sub-network of projects and contributors on GitHub, indegree ≥ 1000 and outdegree ≥ 50 , May 2019.

DIVISION IN THE IT FIRM SECTOR

Our ethnography found two firm profiles. The business model of large IT firms focuses on the collection of user data, promoting cloud computing and Software as a Service. Their concerns were that projects adopt consistent performance, safety, documentation and technical standards, as well as diversify their contributor base; they do not address cost of labour. In contrast small IT firms, which are absent from our GitHub sample, produce OS directly following the “open core” model. They are more likely to address economic and ethical concerns such as the sustainability of OS business models, costs of labour, free riding, and control over OS.

FIRM DISCOURSES IN PROJECTS

Firm discourses express requirements in five core areas: professionalization, business and profit models, labour, neutrality and independence, and infrastructure. Business was the dominant theme in OS project lists with data, users, user experience, and server the key terms. Labour was used with community, company, and typical git actions such as fork, pull request and documentation, showing that git is key to daily work. There was little discussion of diversity.

RECOMMENDATIONS

Recognize: The importance of digital infrastructure needs to be more clearly communicated to publics and regulators.

Investigate: Who is free riding, and what is the significance of business model differences between firms?

Explore: Opportunities for policy development?

RESEARCH TEAM

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A full report will be released in November 2020.

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