

How Firms Engage External Developer Communities to Co-create Software

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INTRODUCTION

While voluntary independent developers are still an essential part of the open-source ecosystem, there has been an increase in open-source projects that are driven by commercial firms where employees of these firms, representing their employer's interests, work on the project while inviting contributions from volunteer developers. Despite the fact that the firm drives the project based on its business goals, it must somehow retain the interest and commitment of voluntary developers. This can be challenging given that the motivations and logics of firms are often antithetical to those of the volunteer developer communities they collaborate with.

Firms rely on bureaucratic authority and monetary incentives to motivate workers to act in ways that support the firm's purposes. However, hobbyist developers' have different motivations. While salaried employees might undertake menial but important tasks to drive the project forward, volunteer developers might not. At the same time, tasks that volunteer developers find interesting might not align with the business goals of the firm and fail to garner support in the community. Thus, success depends on the firm's ability to shepherd volunteer developers towards achieving its goals in ways that are compatible with the values and logics of volunteer developers. Yet, little is understood about how projects achieve this symbiotic relationship. To investigate how firm-led open-source projects resolve the tensions endemic to such collaboration, we investigate the role of maintainers and the ecosystem of communication tools they employ – that in combination forms the socio-technical interface between the firm and the volunteer developers.

RESEARCH QUESTIONS

How do firm-led open-source projects resolve tensions and motivate contributions towards a common goal?

How do interactions at the socio-technical interface between the firm and the volunteer developers foster a symbiotic relationship?

METHODS

Interview Process:

1. Identify firm-driven open-source projects and their different business models.

Hosting and Professional Services	Advertising-Supported Software	Selling IP / Dual Licensing	Selling Proprietary Extension (Freemium)	Not Directly Commercialized
- Clair - Chef - Kubernetes - Elasticsearch - Meteor - MongoDB	- AdBlock - SourceForge	- VS Code - MongoDB	- Backstage - Apache Hadoop - Apache Kafka	- React Native - Flutter - Tensorflow

Table 1. Taxonomy of the different business models derived from the shortlisted projects with examples. Projects in bold represent ones we have interviewed maintainers from.

2. Identify a few project maintainers- employees of the firm that interface with external developers- for each shortlisted project.
3. Conduct semi-structured interviews remotely over Zoom.

RESULTS

At this moment, we have interviewed three maintainers total and have started to gain a sense as to the nature of the collaboration between firms and external developer communities and the maintainers' role. For one, in commercial open-source projects, the direction of the project is still mainly overseen by the firm, and external developers have little say:

“[The project] is really [the firm] first in the sense that [the firm] decides and has the final call on everything, and people are okay with it.”

Moreover, in this setting, maintaining a sense of community is usually not made explicit and doing so generally falls on the shoulders of the maintainers, given that they are the ones interacting with both sides and can see the effect of this on the progress of the project:

“There's no explicit person saying you need to engage the community.”

Lastly, it was clear through these initial interviews that the collaboration of a firm with an open-source community leads to varying interests in terms of project goals, and it is important to be able to reconcile these differences in order for both sides to be aligned on the future of the project:

“I would say, for me, [the] task is reconciling [internal] interests with open-source interests, because I literally sit in between two worlds. I have access to the internal systems, but I also have knowledge of the outside world.”

FUTURE WORK

Currently, we are still in the process of interviewing maintainers from various commercial open-source projects. As indicated in our initial results, we have conducted interviews with maintainers from Clair, React Native, and Flutter. However, a challenge we face at the moment is acquiring enough maintainers to interview; at the moment, response rate is low and so we plan to reach out to more maintainers and will reevaluate our recruitment process if necessary. Directly following this, our next steps are to continue recruiting and carrying out maintainer interviews. Upon interviewing a variety of maintainers from the list of projects we have shortlisted, we will gather the insights we have pieced together after each interview to form overall hypotheses regarding the role maintainers play in the space of firm open source.

