OpenCollab:
A Blockchain Based Protocol to Incentivize Open Source Software Development and Governance

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1 Introduction

In today's software dependent society, open source software is everywhere. Parties ranging from large technology corporations like Google to individual hobbyist developers use open source software as the building blocks of their own projects. Tools that a developer once had to build from scratch are now widely available for anyone to use for free on websites like Github. Not only can anyone easily use these software packages, but anyone can also freely access, inspect and alter the source code, tailoring it for his or her own specialized needs.

The implications of democratized access to quality software is wide ranging. The open source web framework Ruby on Rails not only powers popular applications such as Twitter and Github that millions of people rely on everyday, but it also made web application development accessible to a broader audience by abstracting away the details of composing together components such as HTTP request handling, database querying and templating.

The sustainability of an open source software project is tied to project health and support. Project health is determined by how actively and adequately project maintainers and contributors communicate with users such that the project addresses the needs of the community. Project support is determined by the availability of resources to develop a project[3].

Developer time and attention are the scarcest resources in open source software projects. Users might leave a project in search of alternatives that better suit their needs if project developers fail to properly allocate their time and attention. Canonical, the company behind the Linux operating system Ubuntu, created fragmentation in the Linux community when it shipped a new version of Ubuntu with the Unity interface rather than the standard GNOME interface[2]. Canonical's failure to properly poll for user opinion and allocate developer time and attention accordingly ultimately hurt the Ubuntu project.

1.1 Bounty Systems

A proposed solution to open source software sustainability is a bounty system for issues such as the one operated by the website Bountysource[1]. In these systems, users can attach monetary bounties to project issues that are rewarded to contributors that successfuly resolve issues.

2 Background

2.1 Electronic Cash Systems

2.2 Digital Time-Stamping

2.3 Blockchains

2.4 Cryptographic Primitives and Data Structures

2.5 Bitcoin

2.6 Ethereum

3 Decentralized Git Workflow

3.1 Mango

3.2 Extensions to Mango

4 OpenCollab Protocol

4.1 Protocol Roles

4.2 OpenCollab Token

4.3 Voting on Issues

4.4 Opening Pull Requests

4.5 Merging Pull Requests

4.6 Adding Maintainers

5 Conclusion

References

[1] *Bounty Source: Suport for Open-Source Software.* https://www.bountysource.com/. Accessed: 2017-04-24.

[2] Jon Brodkin. *Ubuntu Unity is dead: Desktop will switch back to GNOME next year.* https://arstechnica.co.uk/information-technology/2017/04/ubuntu-unity-is-dead-back-to-gnome/. 2017.

[3] Nadia Eghbal. *What success really looks like in open source.* https://medium.com/@nayafia/what-success-really-looks-like-in-open-source-2dd1facaf91c. 2016.