

COCO white paper

December 22, 2018

Abstract

Coco is a decentralized, autonomous, anonymous, open-source, for-profit, platform for online collaborative projects based on virtual shares.

设计 COCO 的目的

- 公司的**股价** 是由外在的自由市场决定（「看不见的手」）
- 公司内部的**股份**，可以由公司自行决定，这是 COCO 企图解决的问题，希望做到比现有方法更好。

实名 vs 匿名

All contribs are anonymous by default; Users can use their real names optionally.

Shares

Contributors get shares automatically when peers vote up their contribs.

When an outside **investor** puts money into the company, his contrib is treated just like any other contrib. His investment earns him an amount of shares determined by existing share-holders in the project. This price may vary depending on the investor's outlook for the project.

Branching

Branching occurs when there is a dispute whether to include a contrib or not.

After branching, all previous contribs up to that point are included in the new branch. Then users decide which branch they want to contribute to.

Voting scheme

Votes (also called ratings) can be any number $\in [-1, 1]$. They represent the % (percentage shares) a user wants to give to a particular contrib.

All votes are visible for public scrutiny.

If some features (contribs) are seen to be voted unfairly, share-holders may initiate new branches.

Problems

- “reputation” may be inaccurate when users have small # of contribs
- branching is automatic – you don't need to care about how others vote, as long as your branch works / someone buys it

- bad voting should be penalized, but if a contributor is already low-score, the most we can do is to reduce his score to 0. But since each score is earned either by money or work, the penalty may still make sense.
- How to prevent the possibility of a significant contributor spawning fake contribs? But if all the votes are visible, the significant contributor may risk losing his reputation (in the project) even if he is anonymous.

其实 自愿 的 voting 和由此建立起的 reputation 有问题，因为 vote 别人不能带来直接的利益，而是一个 management task，传统上由 经理人 做。但如果要取代这 management 角色，则需要一个相对地完备的机制。Manager 接受 salary，他的工作是 control tasks, monitor work and give rewards. 问题是这件工作可不可以变成 distributive?

Buying the product

Buyers pay for the project's end product, which includes all its branches.

She can choose to deploy any branch for her usage.

By paying for the product, buyers automatically become share-holders.

Buyers have the right to up/down-vote features (contribs) just like other share-holders.

Potential problems and possible solutions

Free-riders 问题

按道理，那些不作为的 **founders**，其股份应该下跌。但怎样分辨 懒惰的 **free-riders** 和 要求较高的 **founders**？

其中一个解决的可能是：当 **founders** 们意见不合时可以 **分叉 (branching)**，

分叉的意义是：保留两种可能。

1. branch A accepts new contrib X
 - (a) X is a good contrib
 - (b) X is a bad contrib
2. branch B rejects new contrib X
 - (a) X is a good contrib
 - (b) X is a bad contrib

在 (1b) 和 (2a) 的情况下，branch 1 和 branch 2 分别应该受到惩罚。

很明显，应该有 **users** 能判断哪个是 **better branch**，但实际上可能出现 **branching** 太多的问题，还有 **users** 不能分辨有没有渗入 **free-riders** 的分支。

但如果所有 **votes** 是公开的，则在统计上，始终会是较好的 **branch** 胜出。

Insider attacks

Typical scenario: a sub-group of insiders systematically up-vote themselves and down-vote outsiders. They share their identities and contribs among themselves, contrary to COCO's anonymity intention.

Solution: If some users see their contribs are not voted fairly, they may initiate new branches.

We may have an additional feature to penalize bad voting?