Executive Summary

Opportunity

Problem

Software developers fail to capture a large portion of the value they create because they lack mechanisms to *fairly allocate* and *efficiently distribute* that value.

Solution

To correct this inequity, we are designing an algorithmic model for issuing *virtual shareholdings* to the contributors of a project. The project operates on blockchain as a *virtual company*. A decentralized Git hosting and collaboration platform will support the new software development model and exchange and investment of shareholdings.

Market

Trillions of dollars are spent by customers on software development around the world every year. We address three market segments: traditional open-source, corporate software development and their intersection.

Why Us?

We are top researchers and developers from *Microsoft Research*, *UC Berkeley*, *Stanford*, and *Alibaba*, specializing in areas spanning systems, software engineering, machine learning, management, and law. We have spent the past year studying quantification of code contributions by software developers (see our paper: https://per.pub/4893d0e25b7b.pdf) and are building a decentralized Git service (https://www.drepo.io).

Financing

Anticipated expenses for the first three years total ~$15 million. At the current stage, we welcome and appreciate investments amounting to a portion of the expenses.

Opportunity

Problem & Solution

Problem Worth Solving

Software developers create valuable intellectual property, but they receive depressed returns that do not match the value provided. A major portion of the value they create is either *exploited* by the unnecessarily cumbersome companies they serve or *relinquished* to the public domain in the form of open-source code.

Two fundamental causes underlie developers' current situation. First, **information asymmetry**: It is difficult for end users to understand developers' work, and developers typically do not have sufficient information to judge each other' work. Subsequently, all parties rely on the hierarchy and bureaucracy of a company to allocate value. Second, **transaction costs**: It is costly for end users to contract or exchange with individual developers and for developers to do so with each other, so all parties rely on companies as intermediaries to form contracts or make transactions.

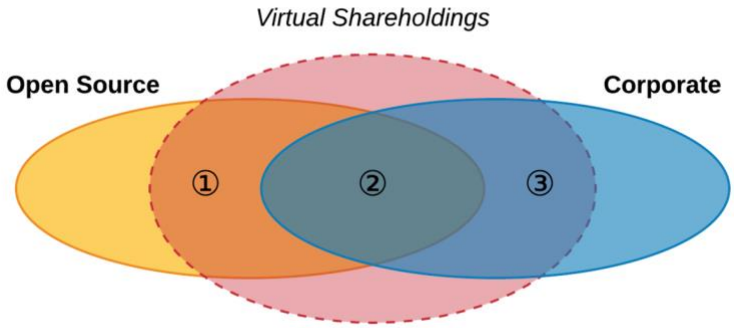
Our solution

We are developing two key enablers to displace traditional software companies and evolve the current open-source model to return value to developers: (1) a program analysis and AI solution to **quantify the value of code contributions** made by developers to a project and assign project shareholdings to the developers, resolving the information asymmetry; (2) a smart contract and legal framework to **directly distribute user payments to developers** of a project according to their shareholdings, eliminating the need for a corporate entity. This system substantially reduces the transaction costs among users and developers.

We will offer **a decentralized Git hosting and collaboration service** to developers, who will create projects on our platform and share the value they create. All legal documents and smart contracts necessary for a project will be generated by the leading developer(s) simply specifying a few parameters in our templates. All developers who contribute to the project will receive a percentage of shareholdings, calculated by our algorithm; additionally, other non-coding contributors can receive shareholdings as

well, according to the predefined conditions of the smart contract. User payment channels are automatically established for each project, and the income from users is distributed according to contributors' shareholdings after deduction of operating costs.

Essentially, developers will choose from three new software development models, corresponding to the intersections of traditional open-source and corporate models, as the following figure illustrates.



① Shared open source: Uses a traditional open-source license (without requiring royalties) and allocates *donations* according to virtual shareholdings.

② Virtual open company: Draws upon the best of both open-source and corporate worlds. Code is public but requires royalties for commercial uses. Any developer can contribute, obtain virtual shareholdings, and potentially receive dividends; in addition, primary shareholders lead collaboration with legal/marketing/HR services/freelancers who are rewarded either with cash or virtual shareholdings as well.

③ Virtual closed company: Develops proprietary software and applies virtual shareholdings internally to a closed group of developers.

Target Market

We address three market segments, corresponding to the three software development models shown above.

① The shared open-source model is suitable for open-source projects that attract sustainable donations from users (including enterprises). Currently, only core maintainers are funded by the donations (the leading author of vue.js speaks on this issue: https://changelog.com/rfc/12). Our model enables a wider and fairer distribution of the donations to most contributors. It will increase the incentives for participant developers to make contributions and encourage the community to thrive.

② The virtual open company model is suitable for open-source projects that may lack financial support (e.g., OpenSSL - http://bit.ly/2MS5wSf, Octave - http://bit.ly/2KB1dOm) or a proprietary project that requires talent from around the world. Virtual shareholdings enable such projects to be both open and profitable. This solves the dilemma that many developers face: working for open-source projects provides freedom of choice but is financially risk, while working for a traditional company guarantees a salary but limits interactions with the community.

③ The virtual closed company model is suitable for developers who are not willing to release their code to the public. Virtual shareholdings and our platform enable them to operate a project with minimal overhead compared to a traditional company. The organizational structure is more agile, and fairer incentives are provided to employees.

We aim to grow the virtual shareholding circle (as in the figure above) to cover a significant portion of the current open-source and corporate worlds. Today, there are approximately 4 million software developers in the United States, and the worldwide developer population is projected to reach 25 million by 2021 (Evans Data). According to Glassdoor, the average base pay for a software developer is ~$80K per year. Thus, the total available market (TAM) size should be at a *trillion-dollar* level.

Moving towards the ultimate vision, we can build three revenue streams.

- A decentralized Git hosting and collaboration platform will be the entry point into the next era of software development. It can support end-to-end encrypted

private repositories whose contents are not visible to any service provider. The recent Facebook–Cambridge Analytica data scandal and Gmail's 'dirty secret' (https://on.wsj.com/2MUuTmg) have reinvigorated users' concerns about the security and privacy of their data. GitHub's yearly revenue is estimated to be $300M, generated mainly from private repositories and enterprise services.

- We can require an up-front fee ($100) for virtual company formation as developers begin to adopt our model. The number of software companies is estimated to grow from 100K today to 1 million by 2027 (Forrester). Meanwhile, GitHub already hosts 57 million projects . The bar to form a virtual company is lower than that to form a traditional company but higher than a traditional GitHub project, so we anticipate a yearly growth of 1 million virtual companies in future.
- We capture transaction fees of 0.5% for all user payment transactions with developers who use our models. We hold the IP of our legal documents and smart contracts, and the transaction fees are the royalties for using our IP. Instead of asking a resource-constrained team of developers for high legal fees at its initial stage, we take our major commission only when the team grows and succeeds. In addition, we offer a warranty of legal counsel if the developers encounter any disputes. As the first mover in this space as well as the designer of the entire legal framework, we have the greatest knowledge of related issues, and our experiences will continue to grow as the practical cases we serve accumulate.

Competition

Current alternatives

- Freelancing and outsourcing platforms offer mainly short-term, one-shot opportunities. Donation platforms (e.g., https://www.patreon.com/ or https://www.kickstarter.com/) are only able to support one or two core developers of a project.
- Existing business models for open-source projects (e.g., https://tidelift.com/) tend to target only the indirect or derivative value of the code.
- The latest tokenized work (e.g., http://oscoin.io/) focuses on the current scope of open-source projects but attempts to build an unnecessarily complex universal economic model.

Our advantages

- Our shareholding model captures the direct but lasting value of the software code, instead of making a one-time payment or paying hourly service fees.
- A virtual company is project-oriented rather than individual-oriented, as in a donation platform; thus, our platform can better serve collaboration among developers and can easily handle turnover of developers within a project.
- Our solution serves both open-source and closed-source projects.
- Our solution resembles the current business world (shareholdings, stock exchange, venture capital, etc.), and it can be easily understood by every developer. The solution is more practical than designing a complex tokenized incentive system.
- We are collaborating with Orrick (https://www.orrick.com), a global leading law firm, to handle all challenging legal issues in our effort.

Company

Overview

- Jinglei Ren: 40%
- Hezheng Yin: 20%
- Roland Vogl: 5%
- Qingda Hu: 10%
- Option pool: 25%

Team

Management team

- Jinglei Ren, CEO. Former researcher at Microsoft Research, with expertise on software systems. Obtained PhD from Tsinghua University.
- Hezheng Yin, CTO. Currently, a PhD candidate at UC Berkeley, with expertise on program analysis and machine learning.
- Roland Vogl, CLO. Currently, Executive Director of CodeX, the Stanford Center for Legal Informatics.

Advisors

- Armando Fox, Professor, UC Berkeley, Department of Electrical Engineering and Computer Sciences. Expert in programming, software engineering, machine learning and online education.
- Eric von Hippel, Professor, MIT Sloan Management School. Expert in economics of distributed and free innovation.
- Poul-Henning Kamp, early contributor to FreeBSD and lead architect and developer for the open source Varnish cache project.

Note: They serve through Persper Foundation, https://www.persper.org, which manages public assets of the platform such as the core value allocation algorithm.

Execution

Milestones & Metrics

Milestone	Due Date
Launch of the basic decentralized Git service	January 01, 2019
Private repository feature	June 01, 2019
Virtual company formation kits	December 01, 2019

Financial Plan

Forecast

We plan to hire 8/2, 16/4, and 32/4 employees for development/growth positions in the next three years, respectively. We also intend to develop a seed fund (managed by Persper Foundation) to sponsor leading projects that adopt our models. The target sponsorship is $10K per month per project for up to six months for a total of 20 projects, leading to a total investment of $1.2M.

We assume 10K sign-ups for private repositories, starting from the release of this feature, and the average monthly fee for a private repository is $1. We assume 1K new virtual companies are formed per month after the formation kit is released. We assume that 5% of the virtual companies can receive user payments in year 2021 and that each virtual company can support 4 developers, on average, each earning $120K per year.

Statements

	2019	2020	2021
Revenue	**$230,467**	**$2,091,110**	**$3,092,760**
Direct Costs	**$1,206,914**	**$26,733**	**$33,383**
Gross Margin	($976,447)	$2,064,376	$3,059,377
Gross Margin %	**(424%)**	**99%**	**99%**
Operating Expenses			
Salaries & Wages	$1,680,000	$3,696,000	$7,550,400
Employee Related Expenses	$336,000	$739,200	$1,510,080
Offices	$43,200	$86,400	$172,800
Total Operating Expenses	**$2,059,200**	**$4,521,600**	**$9,233,280**
Operating Income	**($3,035,647)**	**($2,457,224)**	**($6,173,902)**
Interest Incurred			
Depreciation and Amortization			
Income Taxes	$0	$0	$0
Total Expenses	**$3,266,114**	**$4,548,333**	**$9,266,663**
Net Profit	**($3,035,647)**	**($2,457,224)**	**($6,173,902)**
Net Profit / Sales	**(1,317%)**	**(118%)**	**(200%)**