KOI

Lightpaper

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The Web 3.0 Attention Economy

investors@openkoi.com

Koi Labs Inc.

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investors@openkoi.com

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What is Koi?

The Koi Protocol tracks attention on the open internet to equitably reward valuable content, and the network of Koi Nodes provide faster, cheaper, and more rewarding ways to build cross-compatible, chain-agnostic decentralized apps.

What's wrong with the web?

Traditional Web 2.0 platforms monetize by exploiting their users. Centralized social media apps aggregate photos, music, videos, and writing without paying the creators a single cent. Websites sell user data, post unskippable ads, and hide their best content behind paywalls. At best, a fraction of the value creators generate on the web ends up in their own accounts. At worst, users perform free labor while getting invisibly data mined.

Current blockchain-based "Web 3.0" solutions provide appealing alternatives by offering increased permanence, performance, and transparency in application development. However, as of this writing, these alternatives remain more theoretical proofs of concept rather than profitably mainstream.

Unfortunately, most decentralized apps ("dApps") suffer from sky-high transaction costs, expensive infrastructure, and issues with scalability. Their "profitability" is driven by bullish token speculation, not economic fundamentals. Ultimately, they have failed to help the large majority of internet users graduate from being exploited in Web 2.0 into flourishing in Web 3.0.

Koi-X and Web 3.0

Koi's breakthrough innovation is a scalable consensus protocol that tracks attention on the decentralized internet to reward reliable or creative stakeholders. This serves as the foundation layer of the Koi dApp developer framework, which provides the security, transparency, and incentivized performance benefits of blockchain-based technologies with just a few lines of code.

How it works

Koi's protocol is rooted in two critical components: **robust incentives** and a **scalable consensus**.

Earning Koi

Anyone can use the Network to earn KOI by deploying tasks, running a node, or producing and registering content on the Network. As communities build their own incentive models on top of the Network, they will automatically be cross-compatible, making it finally possible for individuals to capture all the downstream value they create online, without being caged to a host platform.

Scalable Consensus

The KOI protocol is tailor-made for dApps that do not require fast transaction times, providing a superior solution to the expensive infrastructure of Ethereum and similar networks. Traditional blockchains deploy resource-expensive Proof of Work protocols, accruing high energy usage and expensive fees. In contrast, Koi Nodes use energy efficiently by using Proof of Real Traffic (PoRT) to prevent spam, and a stack-based state transition model for more "gradual" consensus.

Building Communities

DApps deployed on Koi earn a percentage of the newly minted KOI every day based on the dApps' user engagement. Users can earn KOI by providing, creating, and registering content that garners attention. Network participants run "Nodes" on their computers, powering the Network, eliminating hosting costs and powering stable and elastic network scalability (see "How it works" for more details on Bundler Nodes). Nodes are rewarded in KOI tokens based on Tasks defined by dApp creators.

Check out the official Koi Protocol paper for a full breakdown of the consensus process.

The Koi Ecosystem

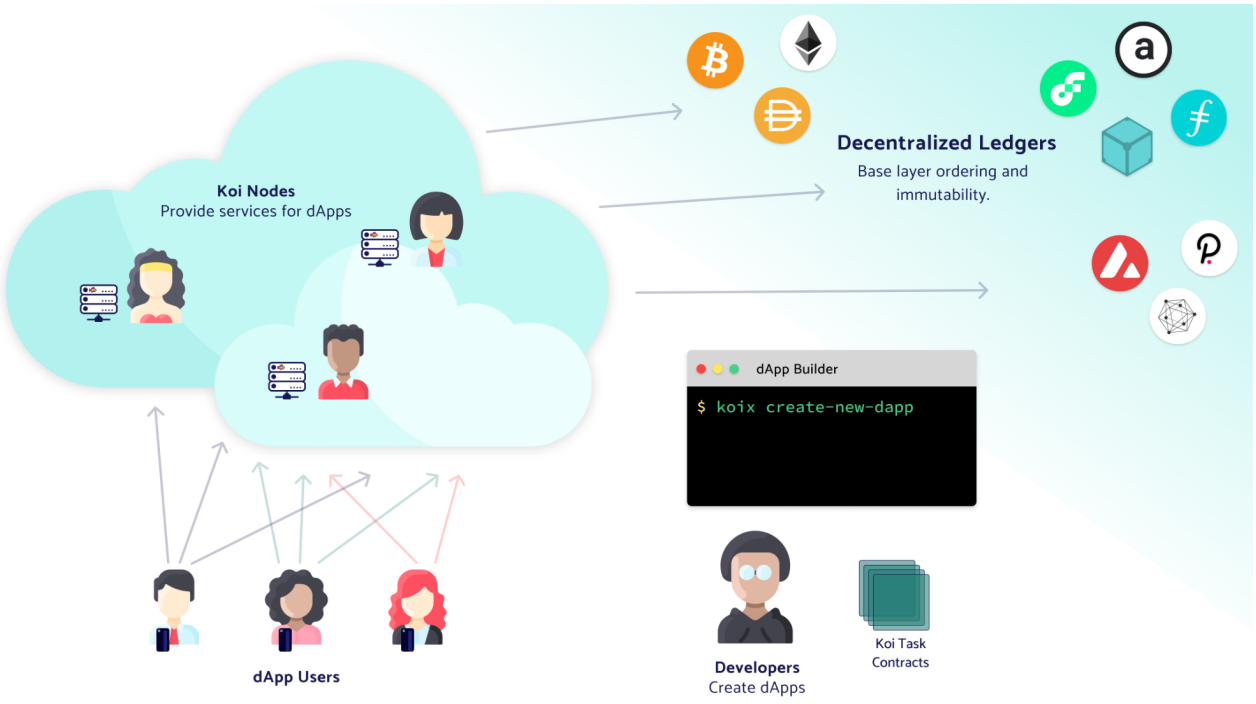

Figure 1: Koi dApp and creative ecosystem. See developer docs for more details.

Proofs of Real Traffic (PoRT)

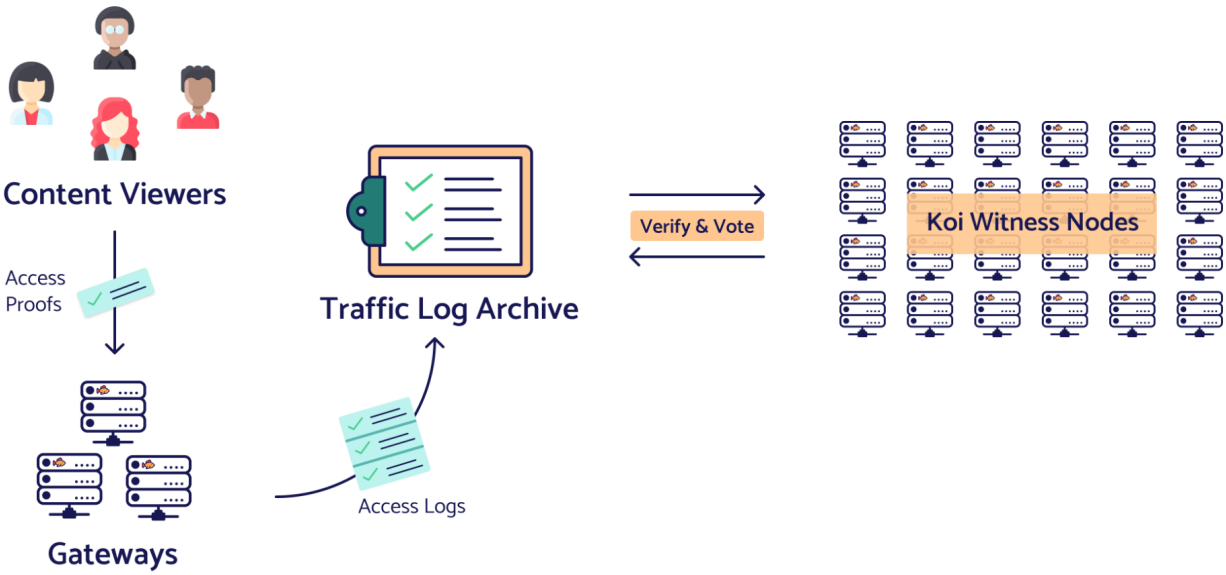

Figure 2: Proofs of Real Traffic (PoRT) diagram. See the Koi Protocol for more details.

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Koi-X

The Koi framework ("Koi-X") makes it possible to launch decentralized applications quickly, along with built-in incentive mechanisms. Arweave's unique storage network makes it possible to build highly scalable layer-two applications using Koi Nodes for services and security.

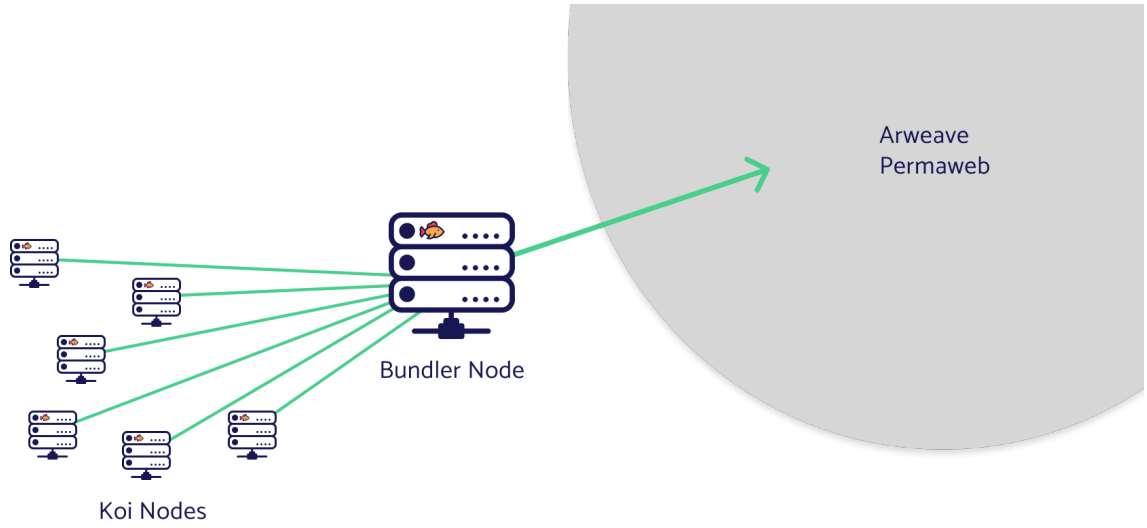

Figure 3: Nodes can stake KOI to act as bundlers, and collect network data to be written to Arweave or other decentralized networks.

Using Koi's command-line interface, developers will soon be able to quickly create dApps that scale appropriately to their needs. Koi provides this scalability by building flexible side chains ("bundles") on top of the Arweave permaweb. This infrastructure enables feeless interaction for Nodes and increases interoperability. The first application of this new 'gradual' consensus process allows Koi to track and verify traffic ("attention") across content gateways, which links token distribution to traffic volume, creating direct incentives for content creation.

Finally, the KOI Network is engineered to scale independently of transaction speed. Since transaction speed is not the basis for a sustainable and easily scalable network, KOI sidesteps these issues and creates a consensus mechanism to accommodate the data structures and volume needed to reach critical network mass.

Running a node

Koi Nodes stake their tokens in order to participate in consensus activities (e.g. voting, slashing, and bundling) and to generate and store information to fulfill Koi Tasks. Node operators are compensated for reliably completing Koi Tasks.

Koi Tasks

Every Koi dApp will use the Koi Software Development Kit ("SDK") to access the network of Koi devices to run their backend. Work that the Network runs for dApps are divided into "Koi Tasks". Tasks are customizable and use the Koi smart contract as the base.

Customization allows Task creators to specify conditions for Node participants, which allows creators to qualify contributors to suit their needs. Some Koi Tasks will be running on virtually all Koi dApps, like reputation assessments and attention proof verification. Others are tailored to the needs of the dApp, such as StoreCat's web scraping, and oracle services.

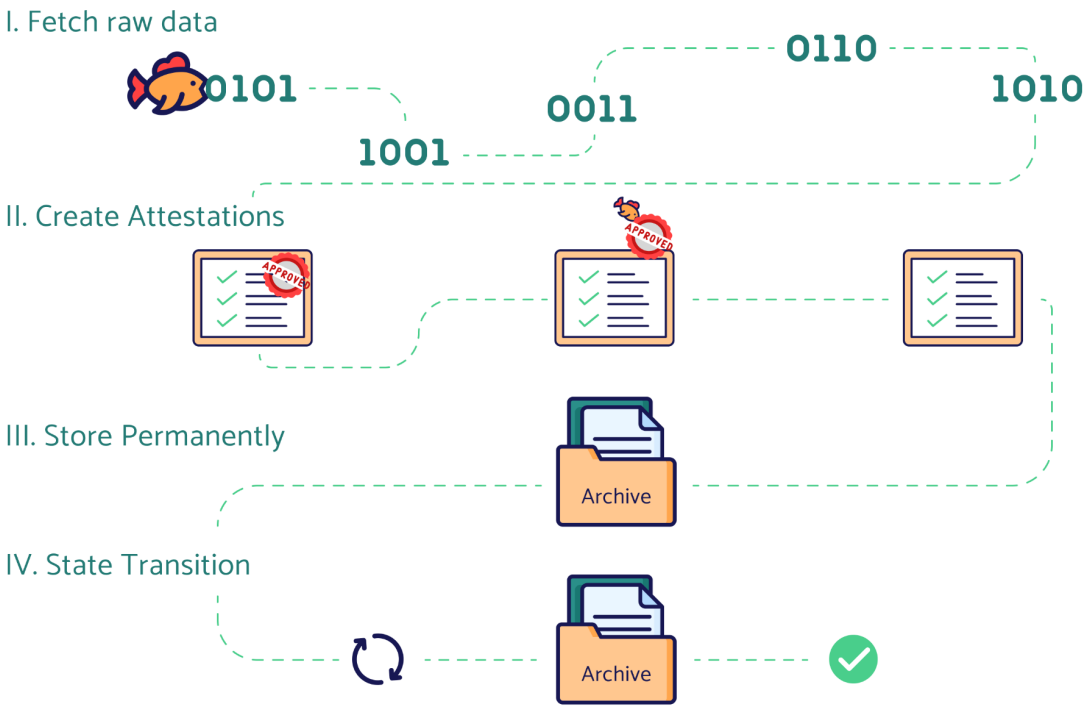

Figure 4: Koi Tasks include four main steps: fetching raw data, creating attestations, permanently storing that data, and updating Arweave's state to match.

Tokenomics of Koi

Koi's incentive mechanism rewards content creators and publishers relative to the amount of traffic logged by the gateways detailed in the Proofs of Real Traffic diagram. 1,000 KOI are minted daily and awarded proportionally to owners based on the number of views relative to the ecosystem.

Koi Token Distribution

The Koi Network provides a new monetization model for decentralized applications. To participate, creators and dApp developers register their content to begin tracking the attention they create. Koi Nodes track gateway traffic for the registered content over a 24 hour period, preventing manipulation by verifying each Bundler's record against the others. Once consensus is reached, 1,000 KOI are distributed in proportion to the verified attention scores. Node operators receive KOI for helping to keep the system running.

Staking and Rewards

The goal of the Network's incentive model is to reward reliable participants. To ensure reliability, voting power is scaled to the time and amount staked. Whenever a Node is discovered breaking the rules, other Nodes vote to slash its stake, and receive a share of the slashed amount to incentivize their effort. Rewards are distributed proportionately to each Node's voting power, which encourages participants to stake as much as possible.

Initially, the Koi Foundation will provide grants of up to 1,000,000 KOI each year to new projects as task credits. These grants will accelerate adoption and ensure Node operators receive reasonable compensation during the growth phase.

Bridging Blockchains

While Koi uses the Arweave as the main immutable data store, other blockchain networks are easily integrated to expand the possible applications and services. As an example, Arweave-based NFTs can be displayed and traded simply on other decentralized exchanges, and all Koi content is generated according to the same standard. As Koi expands, we will explore incorporating additional decentralized storage networks, as well as consensus networks like Avalanche, and Hyperledger private blockchains.

Community Development

We are prioritizing ease of adoption by flattening the barrier-to-entry for people to make dApps with Koi. That means extremely simple syntax for the dApp command-line build and SDK plug-in, multiple templates for different kinds of dApps, and refined tutorials to help anyone with a great idea.

Early Prototypes and Future Growth

In order to bootstrap the Network, the Koi team has developed several early proofs-of-concept, which will be provided as open-source tools and eventually as examples of the Koi-X Framework.

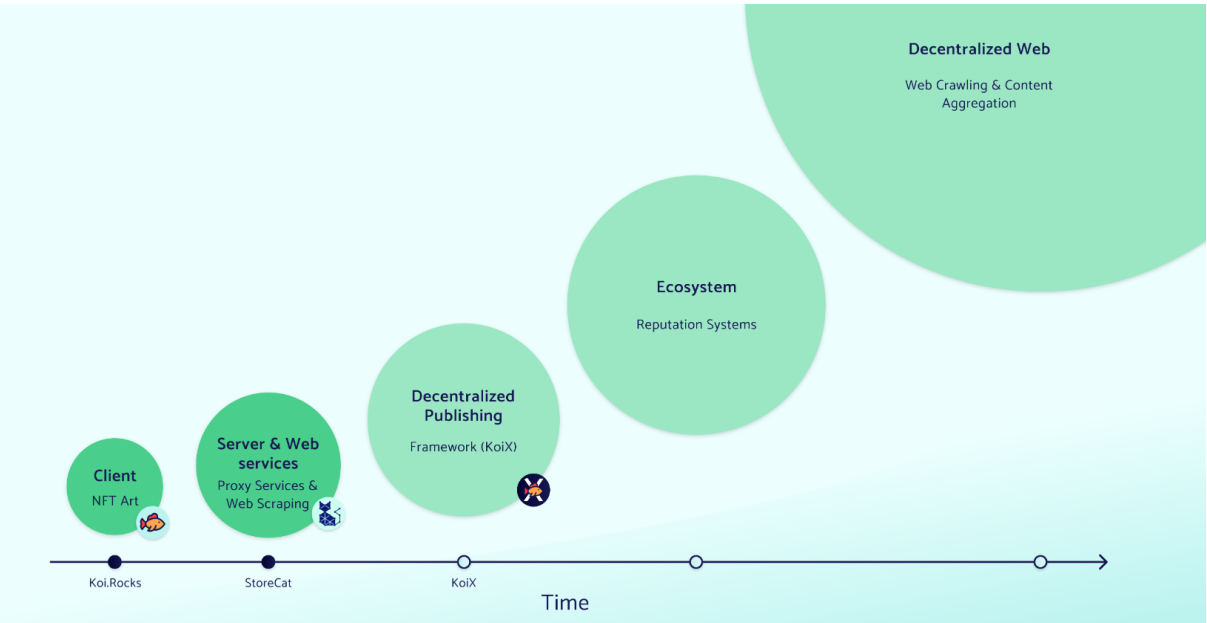

Figure 5: The Koi Network provides the tools to build dApps that allow participants to own their contributions, along with scalable web services and incentives that are tailor-made for this new paradigm.

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Koi.Rocks: An actual utility case for NFTs

Koi has already developed the decentralized platform for NFTs. Koi.rocks permanently archives each NFT and rewards creators based on traffic tracked by the protocol. We have partnered with digital artists to ensure their work is stored securely and ownership cannot be undermined.

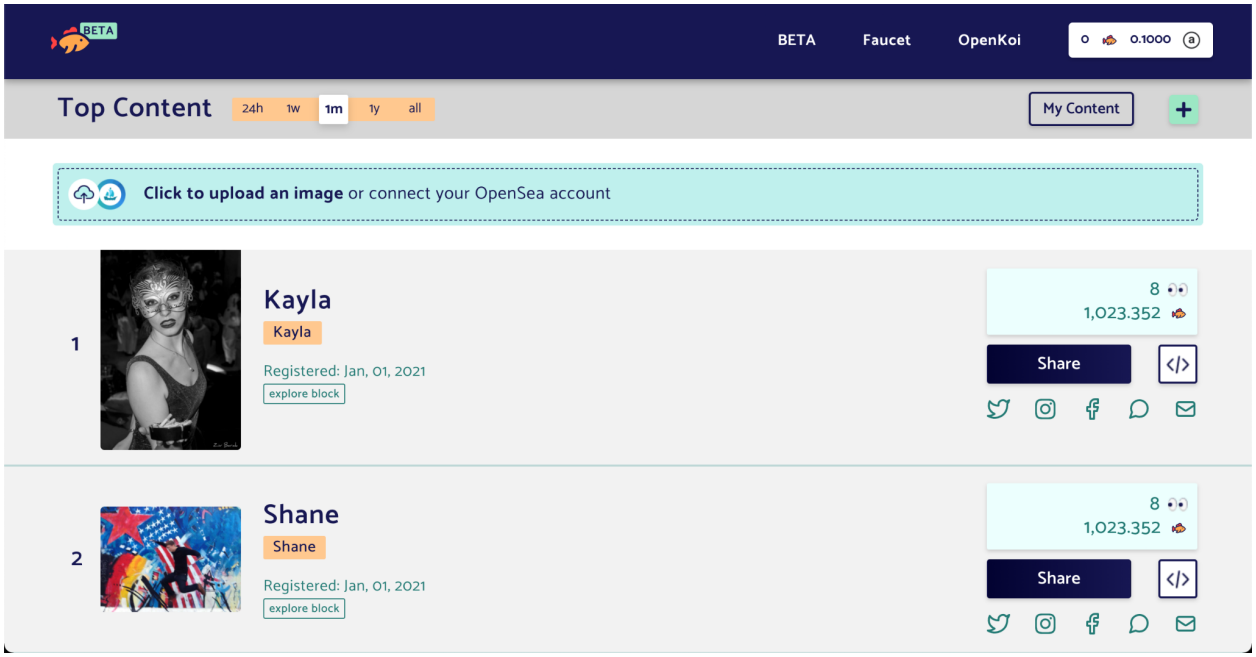


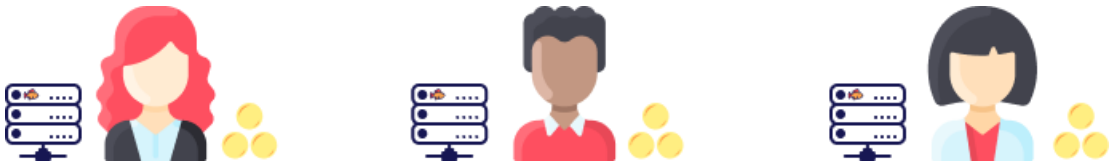
Figure 6: The Koi.Rocks portal allows anyone to create NFTs and start earning KOI whenever they generate attention.

StoreCat: Mapping the web

StoreCat (getstorecat.com) uses KOI "Tasks" to run decentralized web scraping while simultaneously mapping the web. Tasks allow decentralized applications to assign 'Tasks' to Koi Nodes, making it possible to expand the complexity of dApps' value creation by leveraging Nodes' processing power. This process ensures that data remains public and data gets transparently stored on Arweave's permaweb and will always be accessible.

Ecosystem Growth

The Koi Network is designed to grow well beyond its initial scope. Technology architecture compliments social incentives to make it possible to govern not only the Koi Network, but also to build governance structures for the communities that are built on top of it.



Governance

The Koi Network is governed by token holders through a decentralized smart contract system. The longer a token holder stakes, the larger their voting power, ensuring incentives remain aligned for the long term. As projects are built using Koi, they can also employ the same structure to build flexible, cost effective voting systems.

During the initial launch of the Network, the Koi Foundation will provide guidance and lead technology development as necessary, paving the way for decentralized community governance.

Education

The Koi Protocol was founded by core team members from WeTeachBlockchain.org, Ivan On Tech, AltHash Education, and Arweave, and is working with developer communities around the world to develop strong onboarding tools to make it easy to use this new web infrastructure.

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ivanontech ACADEMY

ALTHASH UNIVERSITY

arweave

investors@openkoi.com

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Thanks to Our Partners

Arweave, and specifically Sam Williams, has been an incredible partner to help us launch Koi. Their permanent storage system helped us iterate the Koi idea to what it has become and their gateways power the Koi attention tracking model.

Without the Outlier Ventures Base Camp program, none of this would have been possible. They invested in our seed round to help us off the ground and their tutelage and experience have been and continue to be pivotal in our growth.

Fenbushi Capital led our first seed round, and is leveraging their network of investors for our second and third funding rounds. They have provided invaluable guidance (and great memes) on developing the right product for the right people.