howdoo

The power of sharing

Howdoo: the messaging and social media platform for today's generation, inspiring more culturally rewarding, trusted, and value-driven social engagement.

An introduction to Howdoo

The strategy that's going to help us get there

Imagine taking all that's right about it – the ability to stay in touch with friends and family, colleagues and like-minded individuals, to share news and updates, celebrate winning and overcome losing – and putting that power in the hands of the people actually using it.

Imagine a decentralized platform that doesn't monetize personal data and content for the benefits of a few owners and shareholders. Rather it enables all involved to become part of a financially rewarding community of users who collectively benefit from the commercial viability of the network.

Imagine too a platform that properly rewards content creators for their efforts, provides a mechanism for followers to tip their efforts and offers advertisers the ability to connect directly with their target audiences, and to engage with people who have proactively agreed to consume this content in return for a share of the overall campaign cost.

A platform based on the values of equality, integrity, and meritocracy. Where a person's contribution is translated into measurable value. Where advertising becomes a revenue stream for the person reading it, or simply switched off all together. And where the rewards for participation equate to real wealth that's allowed to break free from the traditional limitations surrounding money transfer…

Welcome to Howdoo.

Our purpose

The meaningful difference we're going to bring to the world

Howdoo is a platform that enables mass social communication and interaction. But more than that, it's a platform that's designed to revolutionize the current social media landscape by inspiring a de-centralized approach to sharing and consuming content – as well as all associated transactions. We will achieve this by putting the individual, every individual, in control of what they see and do, of who and what they choose to engage with, and how they decide to attribute value and monetize these activities.

In other words, we're developing capabilities that will fundamentally re-shape the concept of social media, of what is and isn't possible. Why? Because we believe social networks should be based on a spirit of integrity, collective participation, and shared interests.

A belief that's in direct opposition to existing social media platforms that use the true value of their networks – user-generated content and personal data – to generate advertising revenues for the sole purpose of financial gain.

At Howdoo, our business model would see profits distributed back into the communities and individual users who are ultimately responsible for creating them. We want to reward user activity; to use personal preferences and communal interests to stimulate online commerce; to give people the choice of whether they even want to receive advertising; and to offer advertisers themselves access to their ideal target markets – alongside the ability to converse with people prepared to listen.

Our mission

The strategy that's going to help us get there

Howdoo is using a blockchain-based network of financially incentivized social communities whose purpose is to enable users to earn a share of the advertising revenues generated from their contributions to the network. These will be individuals free to build and participate in communities of friends, family members, fellow gamers and followers, and to interact with them via messaging, file sharing, tipping, and payments, to create far more meaningful, relevant, and rewarding engagement.

Pushing a decentralized agenda, and ensuring no central controls exist, is also integral to the platform. That's because we believe in a user-first approach, and allowing individuals and communities to democratically regulate their own content – and to make collective decisions on monetizing the advertising potential of

their spaces. Participation will be key, and the contributions, popularity, and productivity of these communities will directly add to their success and earning potential.

Finally, Howdoo will also transform the way financial resources flow across the social media environment. Our goal here is to empower users with access to an extensive and ever-growing marketplace of digital assets and services. We do this to help remove any barriers to entry for users wishing to start a small business, and to make it easier for them to build interest by fostering relationships with a community of users – whilst also providing a means for them to trade goods and transfer money.

Our vision

How the world will look when we are successful

Howdoo will be all about participation. We will stimulate it, inspire it, and reward it. But most importantly, we plan to unleash it, allowing every user to gain control over their personal data, and to make the most of their online footprint. Every action and contribution will receive fair compensation, backed up by a next generation approach to online payments and wealth sharing to encourage the fair distribution of value across the network.

It's our intent to enable users from any location and on any device to freely, privately, and securely purchase goods and services online, to set up their own e-shops, and to distribute money to friends and family at the touch of a button. By building an application on top of proven and trusted blockchain enabled technologies, we will overcome existing restrictions on money transfer – including infrastructure limitations, lack of access to banking facilities, or government interference.

Above all else however, our ultimate objective is to create self-sustaining, self-administering, and self-evolving communities of friends, families, co-workers, and peers, who share the same values, the same interests, and the same commitments to supporting and compensating each other. Howdoo will develop into an eco-system that advocates responsible advertising, as well as rewarding people for their engagement and contribution. By democratizing and simplifying the technology, we will bring such benefits to the widest possible global audience.

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The **Howdoo** value proposition

The platform for sharing

The fundamental promise of Howdoo is an ability to bring together people, communities, entrepreneurs and advertisers across the globe for open, trusted, and rewarding exchange.

Below this high-level promise sit three core capabilities:

Connect

As a social media platform we will help bring people and communities together, and connect them to relevant content and opportunities.

Pay

By attaching a cryptotoken to the platform, we will inspire a brand new approach to generating and sharing value.

Earn

We will enable every single user to monetize the value of their online activity, and distribute revenues to those creating the value.

Motivation

There are a number of fundamental social and economic flaws with existing online platforms that Howdoo will address.

1. No control over personal data sold to advertisers

Current social media revenue models are based on the exploitation of their users' personal data. Every time an individual accesses their account they unwittingly provide insights into their interests, preferences, and activities – information that is then sold to the highest bidder – and used to create a constant stream of unsolicited advertising[1]. Facebook[*] is the most popular online platform for marketers[2], targeting both B2B and B2C, with the company reporting advertising revenues of $9.16 billion in Q2 2017[3]. It's a similar story with Twitter, WeChat, QQ, Snapchat, and YouTube etc., with the result that users are becoming increasingly disillusioned with the experiences on offer – and unable to regulate their privacy settings[4].

[1] As reported by the Washington Post: '98 Personal Data Points That Facebook uses to Target Ads to You', August, 2016

[2] As reported in 'Social Media for Business: A Marketer's Guide, Business News Daily, August 2017

[3] As reported by AdWeek: 'Facebook Raked in $9.16 Billion in Ad Revenue in the Second Quarter of 2017', July, 2017

[4] A few years ago, users of Internet services began to realize that when an online service is free, you're not the customer. You're the product." Tim Cook, CEO Apple Inc. – see Information Week: https://www.informationweek.com/mobile/mobile-business/ad-haters-the-backlash-against-google-and-facebook/a/d-id/1316311

[*] Facebook is a registered trademark belonging to Facebook inc.

*With **Howdoo**, users and communities are empowered to decide for themselves whether they would prefer an experience free from advertising, or to accept advertisements in return for payment. Similarly, users and communities have authority over the personal data that they expose to advertisers – and full control over the types of advertisement they deem to be appropriate for consumption. What's more, a feedback mechanism will also incentivize advertisers to respect their requirements.*

2. Content creators not fairly compensated

Content creators are a key source of value for any social media platform. These can be people with hundreds of thousands, if not millions, of subscribers, and their output drives significant traffic – and attracts a correspondingly high level of interest from advertisers. However in the centralized model these content creators are finding that established players are increasingly 'demonetizing' their creations, with no notification or option to appeal[5]. Worse still, there is a growing concern with shrinking subscriber counts, and the preference of established platforms for prioritizing sponsored content[6] – as well as exerting a growing level of editorial control.

[5] As reported by Breitbart.com: 'Content Creators Claim YouTube Demonetizing Videos Without Chance for Appeal', March 2017
[6] As reported by Kotaku.com: 'Top YouTubers Say They're Being Screwed Yet Again by the Platform', November 2016
[7] The individual share of advertising revenue is directly proportional to the user's Proof of Contribution score – see page 22.

At Howdoo, we believe that the people contributing, creating, sharing, and generating value across a messaging and social media platform should enjoy a greater return for their efforts. That's why we propose an incentive-based reward scheme to help promote large-scale user involvement in the platform, and reward content creators for their active contributions. By offering a share of advertising revenue (starting at 60% with the potential to increase to 75%) to be spread among the people actually producing the content, we will fundamentally transform the business models and user benefits associated with social media[7].

3. Users are unable to regulate the amount of advertising they receive

Existing social networks treat users as passive consumers of content and advertisements. This is understandable in the present environment, with advertising being a principal revenue stream for these businesses. As a result, control over whom is able to advertise, where and when, is carefully maintained by a central authority, with advertisers themselves offered various commercial packages for distributing their messages – with users offered no ability to limit or 'opt-out' of this traffic.

[8] Howdoo's cryptotoken – see page 16 for more details
[9] For more information on Proof of Contribution, see page 22.

With **Howdoo** both users and communities will be entitled to payment from any advertising they agree to receive. Importantly, we will provide them with options: as both an individual and as a member of a community, users can select the amount of advertising they're prepared to consume, or simply say no to any at all. Those who do choose to receive content will be entitled to a share of the µDoo tokens[8] generated by the advertiser's involvement– with the percentage received dependent upon a user's overall proof of contribution score[9]. Such rebates can be received as an individual, as a member of a community, or both.

4. Anti-social behavior and moderation

"Cyber-bullying continues to be one of the biggest challenges facing young people. Not only is the internet redefining the climate of bullying, but also it is having clear impacts upon the identity, behaviors and personality of its young users."

Liam Hackett, Chief Executive, Ditch the Label[10]

Another major issue faced by social networks is cyber-bullying and trolling. It is all too easy for people to direct offensive comments to others, with few barriers or penalties in place to limit their actions. What's more, existing social networks often struggle to regulate content in a fair and timely fashion. Indeed, it can be argued that these network are not strongly motivated to do so when limited financial benefit is on offer. That said, expecting a single controlling entity to pass judgment on all content globally is an extremely tall order, especially when you take into account differences in culture, context, and generational differences across a global user base.

[10] See: http://www.bbc.co.uk/news/technology-40643904

Howdoo creates a fair, decentralized and financially incentivized social network, which places ownership of content moderation into the hands of the users themselves. Contributions are deemed to be positive or negative by a combination of objective measures based on service quality and the subjective judgments of other network participants. This removes the need for a central entity to actively moderate both user-created content and advertisements, and instead delegates responsibility to actual users. A community of people can therefore decide for themselves whether content is offensive or inappropriate in the context of their members' culture, interests, sense of humor, and opinions – and penalize anti-social behavior.

5. Antiquated international payments industry

Unlike domestic bank accounts, where the movement of funds is often easy to facilitate, instantly settled, and free of charge, the same cannot be said for international transfers. Moving money overseas is currently an expensive and time-consuming process. This is due in part to numerous foreign exchange rate fees, as well as the service fees charged by providers and intermediaries. To this we can add long clearing times resulting from fraud checks, and vast differences between different government regulations. Then there are the unbanked, and the two billion adults and 160 million small businesses[11] that lack any form of banking access. Existing teller services, such as Western Union* and MoneyGram[12], allow money to be transferred internationally without the need for a bank account, but with the caveat of much higher service fees – hence their growing importance in the global finance market.[13]

[11] Source: Global Findex: http://www.worldbank.org/en/programs/globalfindex
[12] As reported by Investopedia: 'Sending Money: MoneyGram versus Western Union', August 2015
[13] As reported by Forbes: 'Banks Need to Focus On a New Customer: The Unbanked' - https://www.forbes.com/sites/alanmcintyre/2017/05/10/banks-need-to-focus-on-a-new-customer-the-unbanked/#75ad24cc59c8
*Western Union is a registered trademark belonging to Western Union and MoneyGram is a registered trademark belonging to MoneyGram Inc.

Howdoo enables people to send their money around the world as easily as they send messages and media. This service will also be independent of traditional banking facilities, and as such will cater for both banked and unbanked users. Allowing money to be transferred within a social network environment will also allow resource pooling between family members and communities across the globe, thereby reducing friction from activities including charitable donations and providing peer-to-peer financial services such as loans.

6. Advertisers and sellers are effectively disconnected from online customers

For social media marketing professionals it can be challenging to engage with online audiences in any meaningful way[14]. In part, this is because audience insights are created in a static, reactive way that's completely isolated from the wants or needs of the individual. Then there are online marketplaces that also fail to directly link individuals to brands and their products. This is a huge missed opportunity for brands and sellers to nurture a community of like-minded customers, and to create a shared sense of commitment and loyalty to their offering.

[14] See article in eMarketer: 'YouTube's Teen Viewers Complain of Too Many Ads' - https://www.emarketer.com/Article/YouTubes-Teen-Viewers-Complain-of-Too-Many-Ads/1016436

Howdoo combines the concept of an online marketplace with social networking principles. In doing this we provide a platform for both brands and entrepreneurs to sell their products into relevant communities, and to develop more personalized relationships with those who show an interest. This allows sellers to place a direct value on their goods, rather than relying on unpredictable advertising revenue coming indirectly from a central authority such as YouTube or Twitch. In addition, by encouraging users to provide direct feedback on the relevance and effectiveness of campaigns, advertisers are better able to direct their efforts towards people who are most interested in their products and services – thereby maximizing organic reach.

7. Advertisers have limited control over their campaigns

Running advertising on social media has become fraught with many dangers. In addition to the high-level concerns of user animosity, adblocking technologies, and the massive levels of fraud (bots/non-human traffic alone cost digital advertisers $7.2 billion in 2016[15]) connected to measuring campaign take-up, there exist issues surrounding transparency and brand association. The challenges these create include a lack of audit trails and insights: advertisers are never sure where their assets are being shown, and what else they're appearing next to[16]. The risk being an advert becoming connected inadvertently with a fake news article – or in tandem with potentially offensive messaging that could prove a public relations disaster.

[15] Source: Association of National Advertisers: The Bot Baseline, Fraud in Digital Advertising
[16] As reported by Wired: 'YouTube's Ad Problems Finally Blow Up in Google's Face'

*One of the many advantages of **Howdoo** being developed on blockchain is the ability for advertisers to maintain an accurate audit of every location their messaging appears in. With such transparency, organizations can review all their activity, assess any resulting implications, and continuously refine future positioning. Not only will such capabilities improve the level of control afforded to brands, it will also help provide the necessary insights into key campaign metrics, and enable advertisers to optimize their activity by audience and location.*

Building the Howdoo Network

Howdoo's cryptotoken: the µDoo

Howdoo will introduce a cryptographic token called µDoo as the vehicle for transferring value between users, advertisers, and operators of the Howdoo network. As a result, the µDoo will be the token that enables the entire Howdoo network to function.

Examples of how µDoo will be integral to the Howdoo network include:

- **Proof of contribution (POC) and Proof of Trust (POT) – where µDoo tokens reflect the participation of individual users, and their share of all advertising rebates.**

- **The currency for advertising on Howdoo – with advertisers required to own µDoo for funding their campaign activity**

- **Advertising rebates – where µDoo is the mechanism for rewarding both users for engaging with featured content, and content creators for the traffic they generate**

- **Participation on the AdAuction platform – where advertisers will use µDoo to bid for access to specific audiences and communities**

- **Empowering our network sellers – and providing a form of value exchange to stimulate activity in the e-shops that will open on Howdoo**

- **Professional introductions – and enabling individuals with a high POC to set their 'engagement fee' in µDoos, which has to be met by anybody wanting to make contact with them – via the Howdrop messaging function**

- **Rewarding network operators – who will earn µDoo through the technical and financial services they provide to the network's users**

The Howdoo ECO Company[14] will fix the amount of µDoo at **888,888,888**.

[17] For more details on the Howdoo ECO Company, see page 34
[18] For more information on Proof of Contribution see page 22, and for Proof of Trust see page 38 and 41

Implementation on Ethereum

µDoo will be implemented on the public Ethereum blockchain as an ERC20 token. We've done this because Ethereum has a number of key properties, aside from its mass adoption, which make it appropriate for this use case. First and foremost is the smart contracts functionality, which will allow users to automatically exchange money, shares, or other value in a transparent way without having to rely on a middleman.

In a smart contract approach, an asset or currency is transferred into a program and:

> *"...the program runs this code and at some point it automatically validates a condition and it automatically determines whether the asset should go to one person or back to the other person, or whether it should be immediately refunded to the person who sent it or some combination thereof."*
>
> *Vitalik Buterin*

Once the decision is made by the smart contract, the result is stored on the blockchain for prosperity. This level of flexibility in smart contract will enable the creation of complex logic that is executed automatically on the blockchain and is the catalyst for providing a number of features that would otherwise be hard to achieve in a decentralized fashion. The public Ethereum network will serve as the settlement layer for µDoo, allowing for payments to be made directly on the blockchain. Given µDoo will be an ERC20 token, it will also be compatible with the existing Ethereum ecosystem.

The µDoo Wallet

Crypto-based services are yet to see mainstream adoption and there has been a wide variety of discussion on this subject. It is our belief that in order to gain mainstream popularity, we must provide a financial experience that feels natural, safe and familiar.

To do this, the Howdoo client application will provide a personal wallet for holding the µDoo cryptotoken, into which users can easily deposit and withdraw from, within the Howdoo client application.

Wallet holdings, transaction amounts, and digital asset sale prices will have an option to be displayed in fiat currency by default, alongside the ability to view amounts in µDoo. This provides several benefits to the user experience:

- **Transfer amounts can be selected in a currency that has real world value to the payer and payee**

- **The 'cognitive load' of mentally performing exchange rate calculations is significantly reduced when making purchases or transactions**

- **Avoid the need for sellers to regularly update their pricing as the value of µDoo changes over time**

The µDoo Wallet

We will consider it a fundamental requirement that users will be able to interact with their wallet with the same level of ease and familiarity as they do with existing online payments and money transfer systems such as PayPal, Skrill, Stripe, and WePay. Over time, as people become more comfortable with dealing in cryptotoken, this requirement will become less vital for user adoption.

As for foreign exchange, we believe that any cryptotoken should enable the activity, rather than being part of the activity itself. That's why we're determined to ensure that any value exchange feels a natural part of the overall social experience, and not a separate exercise requiring a distinct technology and/or currency. Placing the burden of managing a tradable asset upon users would only serve to distract from this purpose.

The Howdoo Ecosystem

The fundamental principle behind the Howdoo
ecosystem is that all participants should be financially
motivated to behave responsibly and share value
with each other. The ecosystem itself consists of
users, content creators, sellers, advertisers and 3rd
party developers – all connecting and transacting
with each other through a network of decentralized
communities powered by Howdoo node operators
and tellers.

Over time, and as the network matures, we plan to
allow and incentivize third party developers to provide
additional services that complement the core offering.
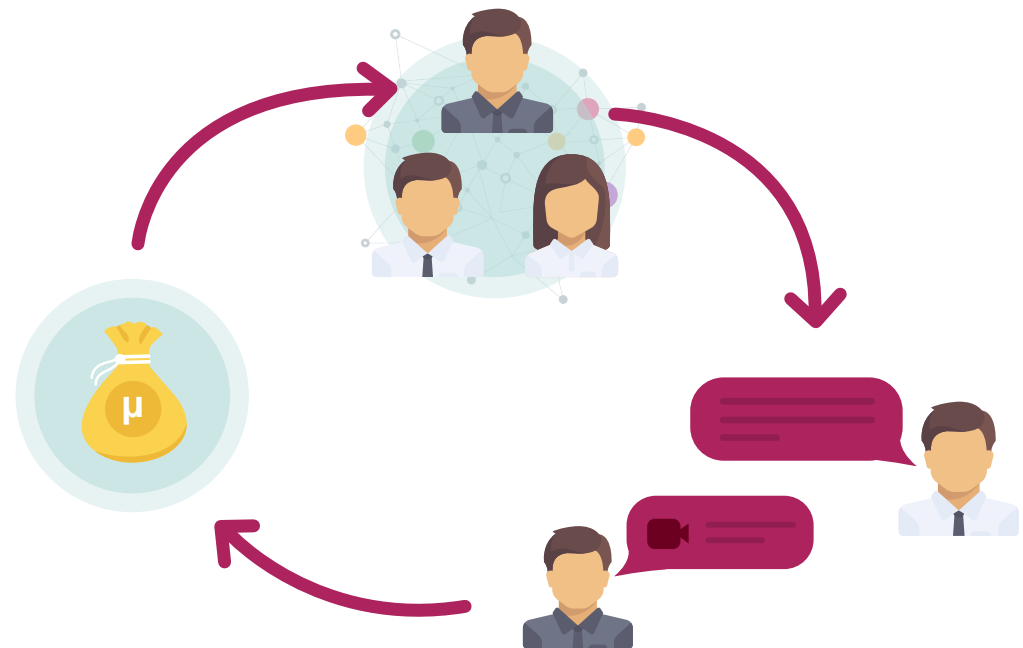
Distributed Autonomous Communities

Any user of Howdoo will be able to setup a community. These will naturally differ in scale and privacy levels depending on the intention of the creator – from private groups between close friends and family members to vast, borderless collections of people who share a common interest. Users will be able to create, join, and participate in communities in order to communicate with and transfer value between other people around the world. In addition, users will also be able to use the network to download games and share experiences with friends and competitors alike.

The Howdoo platform also offers two distinct approaches to managing these communities:

1. **Sole administrator – where the user who initially sets up the community retain administrator controls moving forward**

2. **Meritocratic – where the user who sets up the community has no special role or permissions, and has to play by the same rules as all other members.**
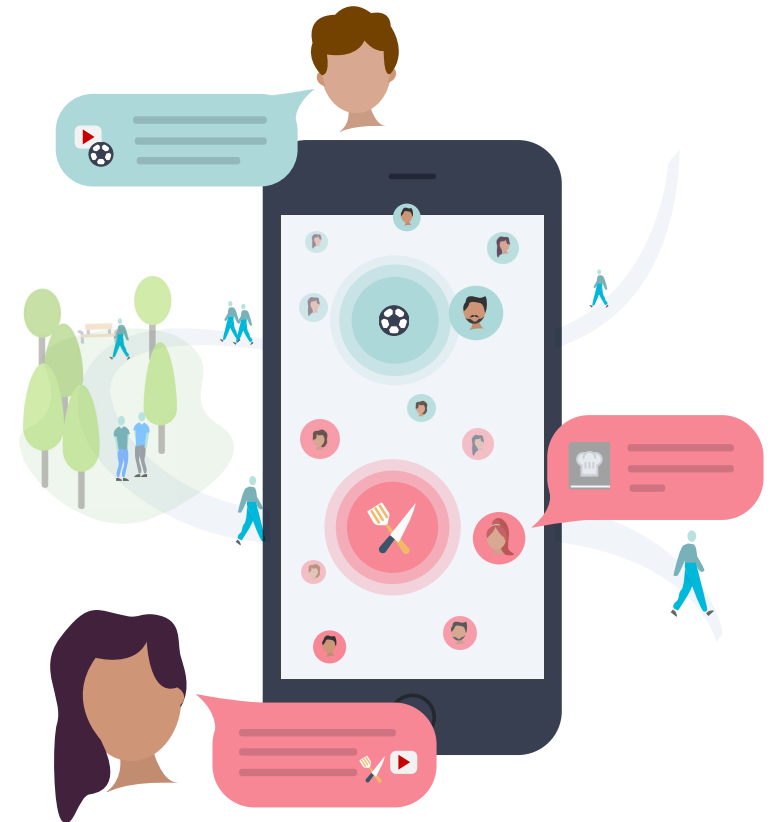
Proof of Contribution

Each individual user and community member will have a Proof of Contribution rating – a continuously evaluated score that will define the permissions, access rights and entitlement to community earnings for that member.

Note that a user will have a different Proof of Contribution score for each community they belong to, as well as an aggregate. Proof of Contribution is therefore not a holistic rating of a user, but a measure of their contribution to that specific community. It is possible that a user may be a key positive contributor to one community, but a disruptive influence to another.

The Proof of Contribution rating will be calculated using the following equation:

$$\max(0, E_1(R_1 - D_1)) * S + \sum_{n=2}^{6} \frac{E_n(R_n - D_n)}{}$$

n = *The week number from 1 (previous week) to 6 (six weeks ago)*

E_n = *Engagement coefficient for week n (e.g frequency of posts, community reach)*

R_n = *Reputation coefficient for week n (e.g. up/down votes, likes)*

D_n = *Disruption coefficient for week n (e.g. messages flagged as inappropriate, messages removed)*

S = *Stake coefficient (i.e. the value of µDoo held in the user's wallet)*

Proof of Contribution

The above calculation accounts for a user's contributions over a rolling period of six weeks, weighted to give more prominence to recent contributions. There is also a multiplier applied to the most recent week's score that is based on the value of µDoo held in the user's wallet. This provides an incentive for users who have recently had an especially positive impact on their community to "double-down" on their Proof of Contribution, and therefore rewards, by purchasing and holding µDoo. At the same time, this algorithm prevents negative contributors from artificially inflating Proof of Contribution scores through their µDoo holdings.
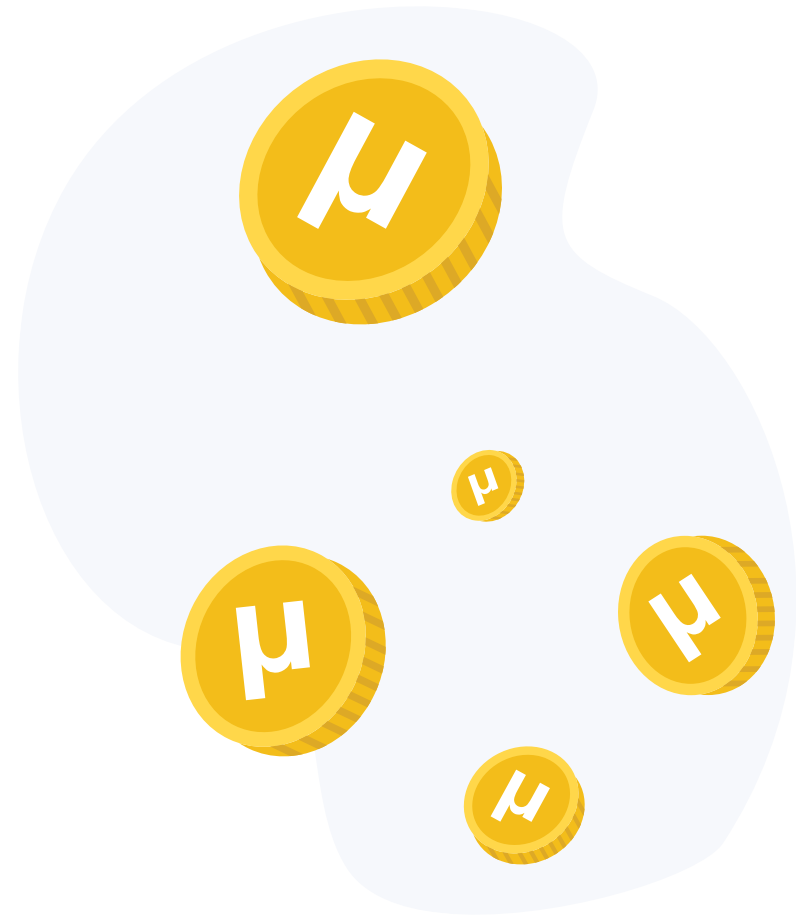
Messaging

The messaging experience within Howdoo will be designed to be familiar to users of existing centralized messaging applications. Users will be able to communicate one-to-one privately through direct messages, as well as posting in the communities they belong to.

A community will have one or more conversation threads called channels. There will be a default channel created when the community is first established and members can create additional channels depending on their Proof of Contribution.

Users will also be able to share text-based messages, pictures, files and videos. Message input will be presented in IM form with emoji support to encourage short, informal messages rather than longer and more formal email-style communications.

Democratic Moderation

The promise of the platform is that communities will be self-moderating – there will be no moderation from the Howdoo ECO Company or any other central party. We understand that for a messaging and social media platform to stay relevant, it must do so without exerting any form of editorial bias or commercial agenda, and Howdoo will use this belief as our guiding philosophy. That said moderation will exist, with community members flagging any messages, images or video content deemed by them as being inappropriate. Once this is done, it will be down to the wider community to agree or disagree, and if a quorum of agreement is reached then the system will remove the content. In the same way, communities can also vote upon whether to ban members who are disruptive or seen to be exerting a negative influence – an action that will also require a wider consensus.

In both instances, the votes of individual community members will be weighted in accordance with their Proof of Contribution scores.
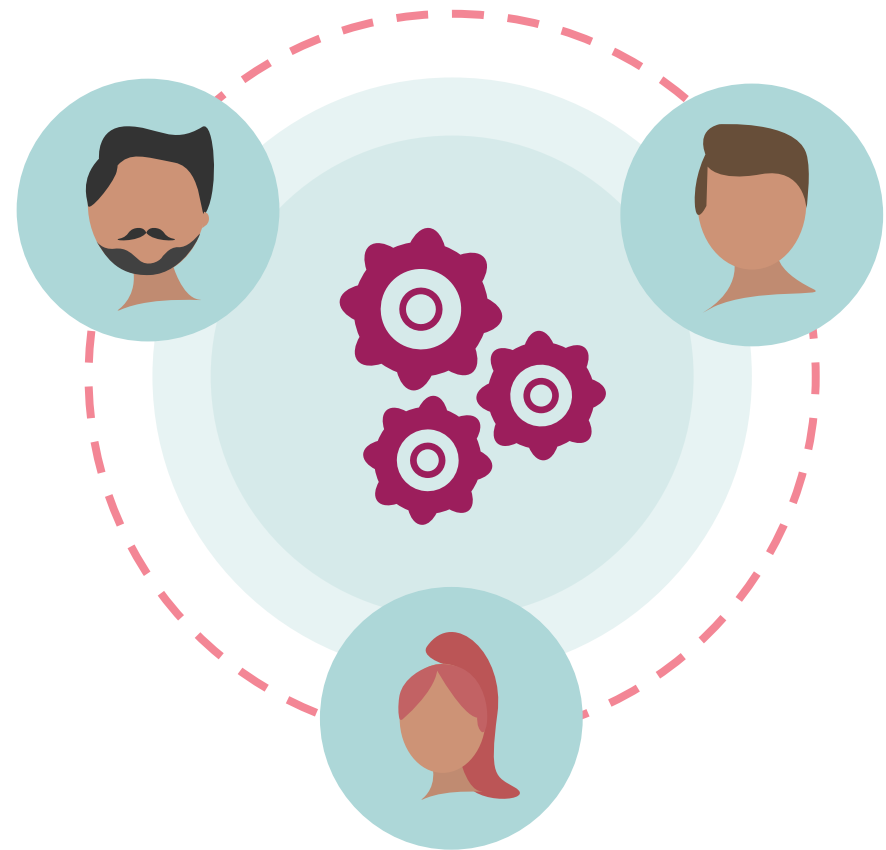
Advertising

Empowering individuals

Within **Howdoo** users will be able to decide for themselves whether they prefer an experience free from advertising, or to accept advertisements in return for payment. In effect we will monetize the attention of individual users, their interests, preferences, and willingness to engage – with activity rewarded through advertising rebates. Importantly this monetization can occur at both the individual and community level, with both levels being mutually exclusive of each other. In addition, each user will have the flexibility to introduce different settings across different communities – and to change them quickly and easily whenever they want to.

* McDonald's and the big M are registered trademarks of KeyBanc Capital Markets Inc.
* Coca-Cola is the registered trademark of the Coca-Cola Company.
* Nike and the swoosh sign are the registered trademark of Nike Inc.
* The Apple logo is the registered trademark of Apple Inc.
* Volkswagen is the registered trademark of Volkswagen AG.

Full stealth mode: *Alice doesn't want her personal data to be available to advertisers so chooses to keep her details private. She will therefore not be included in any demographically targeted advertising campaigns, and not earn a personal share of the advertising rebate.*

Open borders mode: *Robert is not so concerned with privacy and would like to monetize his personal data by making his age, gender, and interests known to advertisers. He will therefore be included in relevant advertising campaigns and earn personal advertising rebates for doing so.*
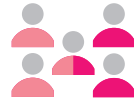
Community mode: *Sarah is happy to be involved in advertising aimed at one of her communities, and to share a percentage of the generated advertising rebate, but wants to be on stealth mode in relation to her personal footprint.*

Professional mode: *David wants to use the messaging app (irrespective of his personal footprint) to share his details to allow targeted business adverts and professional connection requests in return for the associated rebates.*

Empowering communities

Empowering individuals

Users can also earn advertising rebates through their communities. The decision of whether to allow advertisements into a community space will be entirely within the control of the community's members through a democratic voting system. If a community decides to welcome advertisements, advertisers will then compete to display their messages through either a Cost Per Click (CPC) or Cost Per Thousand Impressions (CPT) bidding process, much like the auction system of Google AdWords*. Market forces will therefore dictate the price at which the advertising space is sold.

Communities with higher numbers of active, participating, and engaged members will attract more competition for advertising space and therefore demand higher fees from the advertisers, without sacrificing the privacy of their content or the identity of its members. Communities will also have the ability to vote upon a set of preferences for what they deem to be appropriate content for their advertising space. Each member will be allowed to put forward a number of keyword tags that define appropriate or inappropriate categories, with their suggestions weighted by Proof of Contribution. The most popular tags will then be used to define that community's preferences.

Once the advertiser has settled their dues into the Howdoo smart contract, the rebates will be distributed among those community members who engaged with the activity, with the total amount using weightings defined by their relative Proof of Contribution ratings. With all members knowing that a higher share of advertising rebates is paid to those who contribute positively to their communities, there is a strong financial incentive to be a good citizen. This creates a mutually beneficial system where advertisers can align themselves to motivated and engaged communities, and where community members are rewarded for their positive contribution and engagement – whilst having the power to financially penalize trolls and cyber-bullies for bad behavior.

* Google, Adwords are the registered trademarks of Google Inc.

Empowering individuals

Users and communities will also have full control over the personal data they expose to advertisers, and what the information they make available for use in demographically targeted advertising campaigns that generate a share of available rebates. They will also have control over the number of adverts they're prepared to consume on a daily basis, how these should be shown, and preferences such as appropriate language.

Empowering advertisers

As for the advertisers themselves, they will be able to find demographics and communities to target by searching against community keyword tags. They will also have the ability to see the full set of preferences of any given community before deciding whether to bid, as well as visibility of a community's KPIs in order to determine if it represents an attractive advertising opportunity.

KPIs include:

1. Membership metrics, e.g. number of members, average length of membership, growth rate, etc.

2. Proof of Contribution metrics, e.g. posts per day, percentage of active versus inactive members, average number of replies, etc.

3. Previous campaign metrics, e.g. impressions per day, click-through rate, etc.

Using the Howdoo AdAuction application, advertisers will be able purchase μDoo in their wallets, and set bidding limits for acquiring personal and community advertising space – all managed by a smart contract that will transfer μDoo directly from their wallet to users' wallets upon fulfillment of the required impressions/clicks. The sharing ratio will be based on a 60/40 rule (60% to the community and 40% to the Howdoo ECO Company). AdAuction will be distinct from the main client application to ensure the process does not interfere with the core experience of the community network.

Empowering advertisers

Advertisers will also be required to pay a small transaction fee in μDoo upon each successful bid, with the amount set by their reputation on the Howdoo platform – the higher this is the less they have to pay. This reputation will be determined by feedback from communities based on previous activity, thereby ensuring a financial incentive for advertisers to provide relevant and appropriate experiences to their communities.

In addition, Howdoo will also support greater governance on advert placement. Due to the nature of blockchain technologies, we will provide advertisers with detailed records of exactly where their assets are appearing. As a result, they'll be able to both identify best-performing sites, and instances where their brand is appearing next to inappropriate and potentialy

damaging third party content. This will enable them to further refine and enhance future activity, and to effectively protect their reputation.
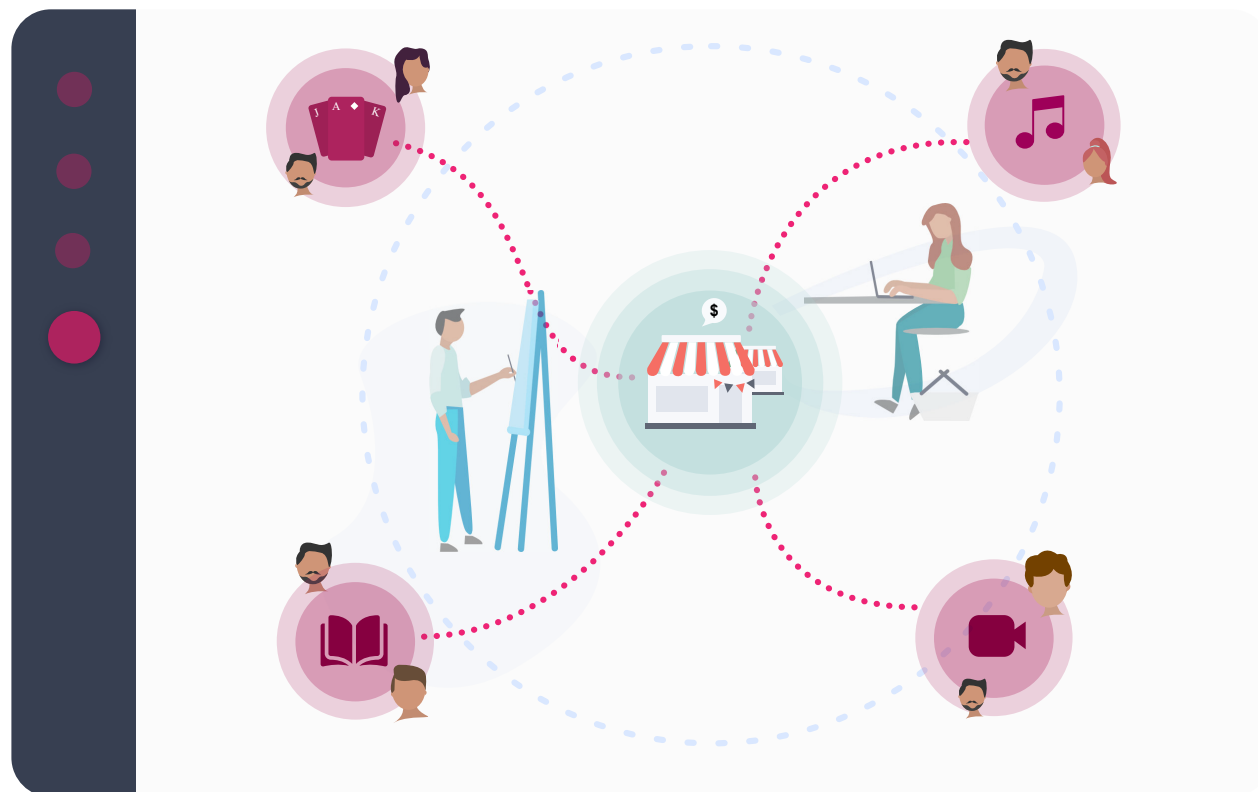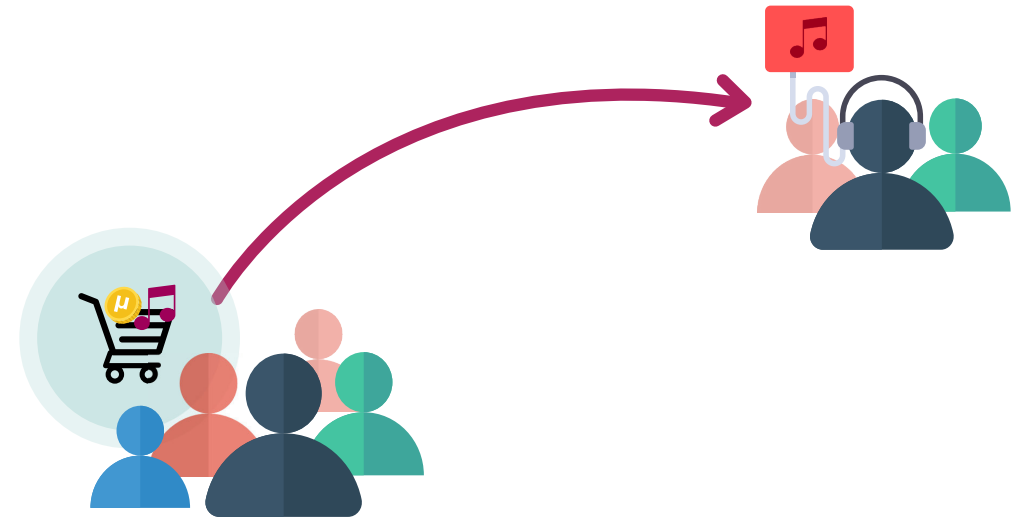
Transactions

The Howdoo platform will also enable individual users to transfer money to each other either as standalone payments, micropayments, or as a single leg of a purchase transaction. These transactions will be completed in µDoo, but users will be able to display them in a fiat currency of their choice, with exchange rates displayed through integrations with a 3rd party foreign exchange rate service. As a result, payment amounts will be presented in local fiat currency to payers, payees, buyers, and sellers, thereby removing the complexities of a cryptotoken from the payment and purchasing experiences. This will be an important feature for minimizing the challenge of mentally calculating exchange rates, which in turn will allow people to more easily gauge the value of individual purchases.

Individual users will also be able to sell digital assets (such as music and artwork etc.) through their communities, with items for sale listed and available for viewing by other members – with any purchases distributed to the buyer via the Howdoo network. A smart contract will then be executed to ensure that upon successful execution of the µDoo transaction, the rights to the digital asset are exclusively signed over to the buyer. This process will eliminate the threat of counterparty risk faced by buyers on traditional online marketplaces, without the need for a controlling central party.

Transfers

Whether it's lending money between friends, donating to a cause, or sending funds to family members back home, Howdoo will enable people to transfer their money around the world as easily as they send messages and media. Providing this service, and making it independent of traditional banking facilities, will enable Howdoo to cater for both banked and unbanked users. Once connected to the network, users will be able to convert fiat currency into μDoo via a relevant bank account, debit/credit card or the global network of Howdoo tellers, then instantly and securely send the μDoo across any international border.

Turning the μDoo back into a fiat currency for an unbanked recipient means simply locating the nearest Howdoo teller via the Teller App, and to make this process as simple and convenient as possible we will offer a Howdoo app that includes functionality for identifying the closest nearby teller to any user.
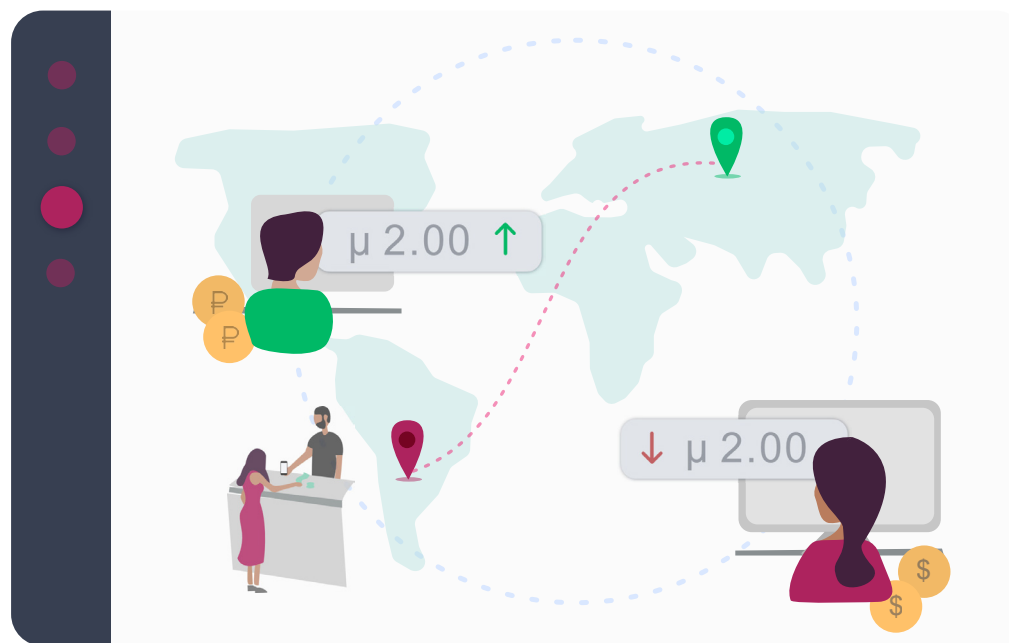
Howdoo is committed to re-imagining how value flows across a social network. We consider it a basic right of any user to be able to transfer any amount in their local currency into a recipient's Howdoo wallet, without having to concern themselves with the complications of handling a cryptotoken – and without accruing transfer fees, foreign exchange commission charges, clearing delays, or government interference.

We also believe in the fluidity of value transfer, and enabling users to see this happen either bank account to bank account, bank account to unbanked, and even unbanked to unbanked. When either a sender of recipient is unbanked, they will simply need to locate and access the nearest Howdoo teller.

The Howdoo ECO Company (ECO = Ecosystem)
Overview

At the highest level, the Howdoo ECO Company will maintain responsibility for supporting the Howdoo ecosystem, and for ensuring the platform's development is aligned to the objectives as laid out in this whitepaper.

In addition, the ECO Company will also be the custodian of all remaining tokens, manage the Howdoo Revenue Distribution Engine, and drive the project roadmap forward. These are tasks that will be completed in collaboration with the Howdoo user community to facilitate a democratic process for network governance – with the Howdoo ECO Company actively involved in incentivizing the positive contributions of users and network operators through the Howdoo Revenue Distribution Engine.

Members will also help ensure the core beliefs and underlying values behind the Howdoo project are maintained, and that user feedback is received, collated, and acted upon whenever necessary.

Supporting the Howdoo ecosystem

The Howdoo ECO Company will be initially responsible for funding the development and ongoing maintenance of the Howdoo ecosystem. This will be until the network becomes self-sustaining in terms of revenue generation, and self-supporting in how these resources are used to both support the Howdoo ECO Company's goals and revenue distribution plan.

The network will generate revenue through the following channels:

1. **Payments/Purchases – were there will be a small fee associated with each transfer and sales transaction**

2. **Advertising – where advertisers will enter into smart contracts with users and communities for placing advertisements in their space, to be paid once the contractual conditions have been met – with the Howdoo ECO Company receiving 40% of the µDoo's generated, and the remaining 60% being paid to users and community members**

3. **Tellers – the network will earn a small percentage of the teller's transaction fees**

Network revenues will be divided between the Howdoo ECO Company and the network operators according to the Howdoo Revenue Distribution Engine.

Revenue Distribution Engine

Of the revenue received by the Howdoo ECO Company, a fixed percentage will be redistributed, in the form of µDoo, to network operators – via a smart contract.

This percentage split will be set at:

60%

to be redistributed back to network operators, with the amount received by each operator dictated by their specific Proof of Trust score.

40%

will be kept by the Howdoo ECO Company to fund operational costs such as the provision of liquidity for financial operators and ongoing development work.

Howdoo
ECO Company
40%

Network
Operators
60%
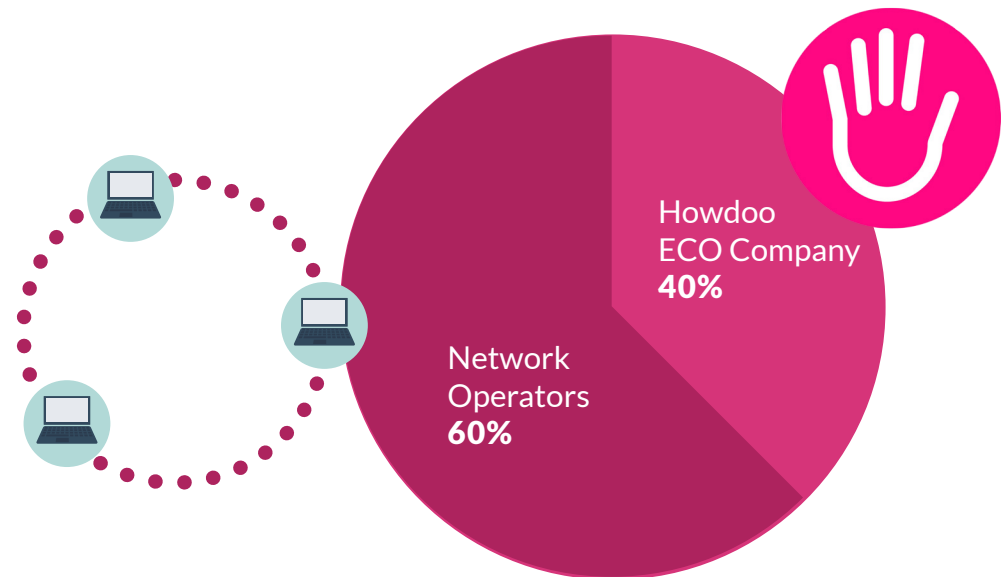
**- Operational Costs
- Liquidity for financial operations
- Ongoing development work**

Node Operators

Node operators are users who will run the 'node operator executable' in order to provide services such as storage and processing to the network. Node operators are expected to maintain network availability and uptime, and, as such, will be incentivized to do so by earning µDoo for their actions. The amount of µDoo granted will depend on the node operator's Proof of Trust score, which will be a function of:

- **The amount of storage provided to the network**

- **Operations processed on behalf of the network**

- **Availability metrics**

- **Existing stake of µDoo held**

Node operators are therefore financially incentivized to ensure they maximize their reputation by providing both a reliable service to the network, and accumulating an overall stake in the network. As an example, an operator may configure their node to be available for processing push-notifications for mobile devices and identity service requests, without providing any storage.

Some technical knowledge may be required to install, configure and run a node operator executable.

Node Operators Proof of Trust

Node operators will be compensated for providing network availability and storage to the network in the form of μDoo. The amount of μDoo granted will depend on the node operator's Proof of Trust score, which is designed to only reward node operators who achieve sustained node availability of at least 95%.

The Proof of Trust rating will be calculated periodically using the following equation:

$$\max(0, (N_t - 95)) * S + (G_t + O_t)$$

t = *Sampling period*

N_t = *Network availability for time period t (i.e. proportion of node uptime)*

G_t = *Storage coefficient (i.e. minimum gigabytes of storage made available to the network during time period **t**)*

O_t = *Processed operations coefficient (i.e. number of operations processed on behalf of the network during time period **t**)*

S = *Stake coefficient (i.e. the value of μDoo held in the node operator's wallet)*

Teller Network

Howdoo will also stimulate interoperability with other aspects of a user's typical financial experience. We understand that for µDoo to gain mass adoption, it must be easy to exchange for a fiat currency and cryptotoken regardless of geographical location or access to banking facilities.

To empower this activity, Howdoo will establish a network of tellers to provide a global, decentralized exchange service. This will be of particular importance for users with no access to banking facilities or credit cards, and who are therefore traditionally excluded from online services.

By enabling any user of the Howdoo network to act as a financial operator, we will create a fairer and more competitive industry for teller services – and thus significantly reduce costs and improve the quality of service for those involved.
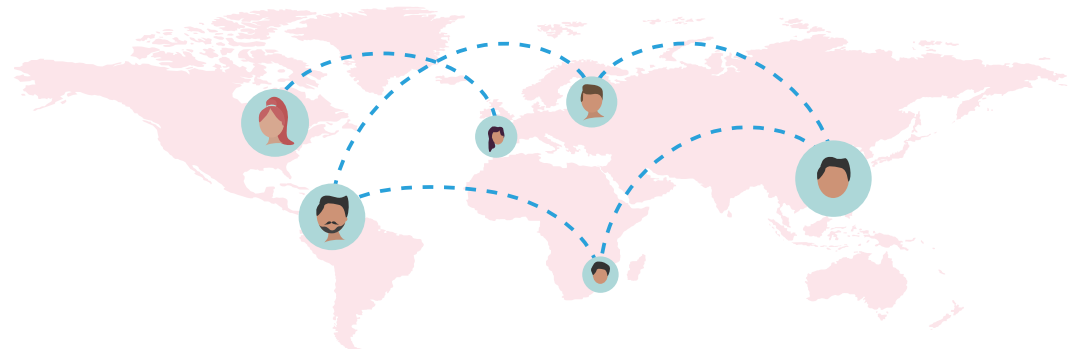
Teller Network

Similarly to Node Operators, tellers will be incentivized to provide their services to the network by enabling them to receive a percentage of the income the network receives. This compensation, in return for a fair service provided to the network, will be paid out in µDoo with the amount dependent upon the teller's Proof of Trust score.

A teller's Proof of Trust score will be calculated by:

- **The number of successful transactions completed in a given time period, relative to other financial operators**

- **The number of unsuccessful/aborted transactions, which are viewed by the network as a metric of poor service**

- **The average transaction fee charged by the teller, where lower transaction fees are rewarded by the network**

- **The existing stake of µDoo held in the network, where a higher stake entitles the operator to a higher pay-out**

A teller is therefore financially incentivized to make sure they have a high Proof of Trust score in order to earn a greater percentage of overall network income. At the same time, whilst tellers will be responsible for setting their own fees and exchange rates, the emphasis will be on them to offer competitive prices in order to maintain a high Proof of Trust score – and therefore continued business.

The Howdoo ECO Company would earn between 0.5 – 2.5% of the teller's fee, with the remaining balance paid to the teller, on top of any profit made from their spread. In order to stimulate mass adoption, tellers will also receive regular µDoo incentive payments from the Howdoo ECO Company depending on their Proof of Trust score.

Tellers Proof of Trust

Tellers will be compensated for providing a fair service to the network in the form of µDoo. The amount of µDoo granted will depend on the teller's Proof of Trust score, which will penalize unsuccessful transaction processing and transaction fee volatility, both of which are viewed by the network as a metric of poor service.

A teller is therefore financially incentivized to make sure they have a good reputation in order to earn a greater percentage of network income. Tellers set their own fees and exchange rates, but must remain competitively and consistently priced to ensure a high Proof of Trust score and continued business.

$$S * V_t \left(\frac{Q_t}{\sigma(F_t) + 1} \right)$$

t = *Sampling period*

V$_t$ = *Volume of transactions processed in time period **t***

Q$_t$ = *Service quality coefficient (i.e. proportion of successfully processed transactions versus failed transactions during time period **t**)*

σ(F$_t$) = *Standard deviation over the set of transaction fees charged during time period **t***

S = *Stake coefficient (i.e. the value of µDoo held in the node operator's wallet)*

Network
Adoption and Growth

Incentivized Organic Growth

The advertising earning potential for individuals, communities, and content creators provides a strong financial incentive for the Howdoo network to drive its own growth. In addition, by providing improved rates of advertising rebates to content creators, we will stimulate creation of the basic resources needed to inspire mass adoption.

Communities will also benefit from adopting a more active approach to expanding their size, as over time such rapid growth will equate to an exponential increase in earnings per member. It will therefore be in their interest to reinvest some of their own advertising revenues, and to become advertisers on the network themselves – thus helping to further increase network advertising revenues over long-term.

Howdoo Incentive Scheme

As a further catalyst to the adoption and growth of the network, the Howdoo ECO will implement an incentive scheme for a limited period of time. To be more specific, the Howdoo ECO will release 21.5% of the available μDoo supply over a 3-year period as incentives to users, tellers, and node operators who form the early adopter backbone of the network.

The μDoo token will be used to power purchases, payments, advertising campaign costs, and community maintenance. As the network's popularity and user-base grows over time, there will be an increased volume of transactions in μDoo.

Network participants will be rewarded as follows:

1. **The first 10 million users who meet a minimum Proof of Contribution threshold will be granted a one-off μDoo bounty**

2. **All node operators and tellers who meet a minimum Proof of Trust threshold will be rewarded with μDoo on a monthly basis over the 3-year period.**

After reaching a critical mass of 10 million users we believe that organic growth and social virality, combined with the existing financial incentives of the network, will encourage rapid, exponential growth in user and community numbers. Also, by appealing to content creators and sellers – and through them advertisers – to release a constant stream of new content and offers onto the platform, we will maintain the long-term attractiveness and relevance of the Howdoo platform.

Technical architecture

The Howdoo ecosystem consists of:

- **Client applications for desktop and mobile**

- **Node operator executable**

- **Teller applications for desktop and mobile**

- **AdAuction advertiser applications for desktop and mobile**

- **Blockchain for storing core information and metadata**

- **IPFS for storage of message and files**

- **P2P messaging and security protocol**

High-level Architecture
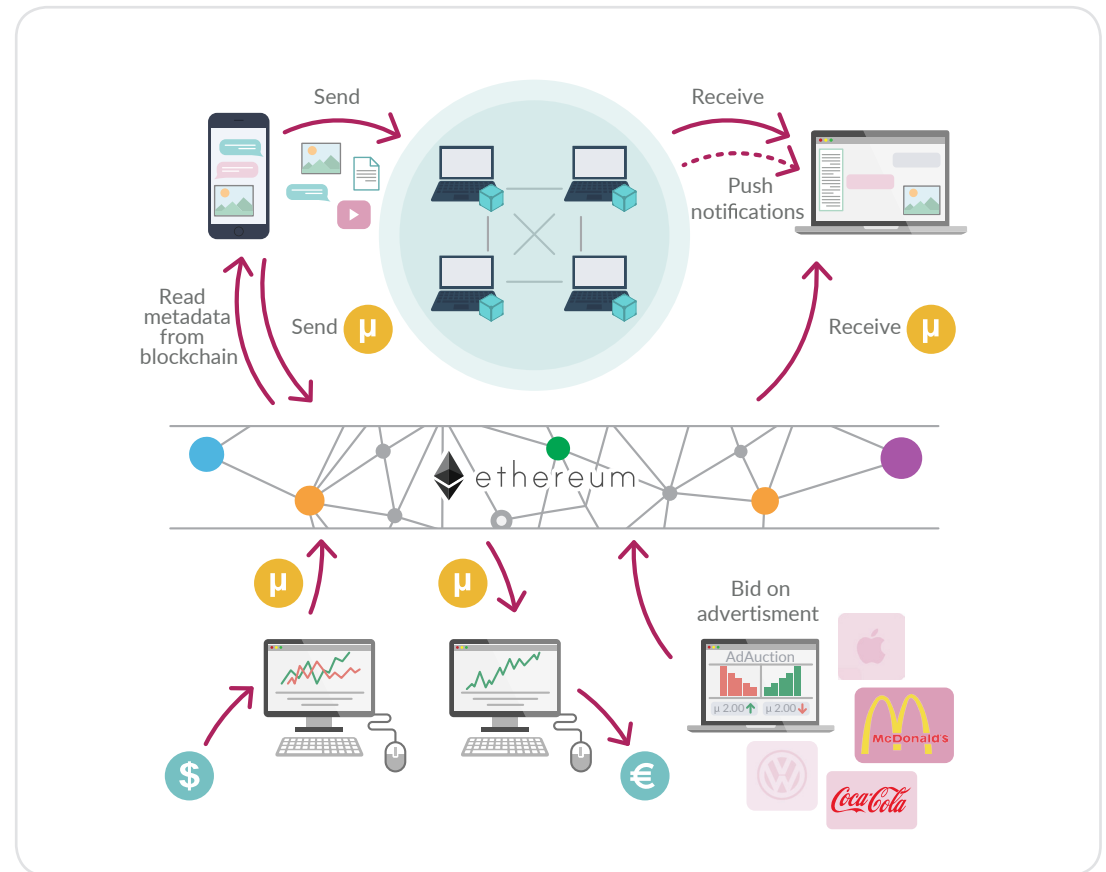
Blockchain

The Howdoo network will leverage the Ethereum blockchain.

Ethereum is a decentralized platform that runs smart contracts: applications that run exactly as programmed without any possibility of downtime, censorship, fraud or third party interference.
Link: https://www.ethereum.org/

Ethereum will be used to store the Howdoo groups and their associated metadata. Message history and files will not be stored on the blockchain - instead, IPFS links to message history and files are stored on the blockchain so that Howdoo applications can fetch the relevant information and files from the relevant storage nodes.

One of the main goals of Howdoo is to bring blockchain technology to the masses, and as such we want to build on top of an ecosystem that is already shown to be achieving critical mass, and which has developed trust within the blockchain community. This will enable Howdoo users to leverage all the benefits of this decentralized technology.

Identity Management

The Howdoo network will ensure that users can message, purchase from and transact with each other all through a simple and consistent network identity. What's more this identity will be tied to their wallet address, and therefore easy to remember and use – so as not to create the usability issues often encountered by mainstream users when dealing with private keys and alphanumeric wallet addresses. A user's Howdoo identity will also be their public facing and memorable anchor point for managing their Proof of Contribution score – while an easy-to-use service will be provided by the Howdoo network for integrating with existing identity providers.

Storage

The Howdoo network will make use of the distributed hypermedia protocol IPFS for addressing the large-scale storage requirements for message history and files. Using distributed storage technology will allow highly secure and redundant storage of encrypted data, with access provided only to those with the corresponding security credentials:

> IPFS and the Blockchain are a perfect match! You can address large amounts of data with IPFS, and place the immutable, permanent IPFS links into a blockchain transaction. This timestamps and secures your content, without having to put the data on the chain itself[19].

Network storage will be provided by Howdoo node operators, who will be incentivized to do so as detailed above. Communities will also have the option to link to their own storage provider if required. In addition, each community will have their own privacy settings which will in turn dictate who can and should be able to access user-generated content. As such, we will provide a mechanism for ensuring that only those users in a community can access the content belonging to that community. This will form the basis of Howdoo's 'zero-leak policy'.

By using IPFS in conjunction with the network of node operators, it will be possible to allow features such as conversation history and the persistent storage of images and videos within communities. As such, if a user installs the Howdoo application on a new computer and logs in to their existing wallet, they will have access to all previous conversations and files. This is a vast improvement on many current distributed messaging platforms, and their approach to providing peer-to-peer delivery and storage – where conversation history is typically only stored on the device that received the initial message.

By leveraging existing and forthcoming blockchain technologies, we will be building this capability directly into the Howdoo application. For example, Filecoin has stated that they intend to open up smart contract and bridging functionality[20], which would allow the Howdoo application to handle file, uploads, security and downloads on behalf of the user.

[19] See: IPFS is useful here and now - https://ipfs.io/#uses
[20] See: Filecoin: A Decentralized Storage Network, Section 7 - https://filecoin.io/filecoin.pdf

Howdoo Client

There will be two distinct Howdoo client applications: one for social network users and another for enabling advertisers to bid for community advertising space. Both applications will be available on desktop and mobile platforms.

Client stack

The Howdoo development team has strong prior experience with using Electron to produce native desktop applications. The client application and teller application will both use React for interactive UI components, and utilize underlying blockchain and IPFS applications via their exposed HTTP and WebSocket APIs. Electron is used to package and install all required libraries and applications, making the end-user installation process simple to complete. The applications will be distributed as .dmg or .exe files, depending on platform.

The node operator application is initially distributed as a .deb package file, which will install and run as a service on the node operator's machine.

The Howdoo mobile applications will be similar in architecture to the desktop applications and use React Native to enable the Howdoo development team to deliver both Android and iOS applications.

Data model

Each community is stored on the blockchain with the following model:

- **Community id, name, member list, access mode, funding mode, and other associated metadata**

- **IPFS links of distributed files for message history storage**

- **IPFS links of distributed files for file storage**

Artificial Intelligence

The Howdoo platform incorporates inductive AI learning models for cognitive and behavioral analysis into its operation. This allows for the AI model to introduce reasoning without the need to identify the target, thereby maintaining privacy across the network. Algorithms such as knowledge-based inductive learning (KBIL) that is used for finding inductive hypotheses on a dataset with the help of background information.

Typically this form of modeling performs at an accuracy of >90%, as the patterns developed are suited to the data obtained. This enables the system to induce a general rule from a set of observed instances, often involving the classification of various 'sorts', and either assigning a particular input to a class or identifying a particular output to its expected reward.

Utilizing a subfield in terms of Inductive logic programming (ILP), the Howdoo AI allows for uniform representation of cognitive and behavioral patterns for a certain induction type of modeling to take place. A simple schema would be to take both positive and negative examples with background knowledge to create a finite hypothesis.

The system also utilizes Inductive Programming (IP), a special area of automatic programming, which addresses learning of a typically declarative and often recursive set of programs from incomplete specification such as input/output examples or constraints. This allows for Howdoo AI to better understand and adapt to different unpredictability models while at the same time identifying and classifying anomalies.

Artificial Intelligence cont.

One important aspect of IP is the inductive synthesis of actual, executable programs including recursion or loops.

Given a particular set of primitives, some target function may not be representable by only one recursive function definition such that a non-specified recursive subfunction needs to be introduced; this is called (necessary) predicate invention in ILP. E.g., it is not possible to define the Reverse function by one recursive function definition of one parameter only using the primitives from the example above. IPS is commonly regarded as a search problem. In general, the problem space consists of the representable programs as nodes and instances of the operators of the IPS system to transform one program into another as arcs. Due to under-specification in IP, typically many (semantically) different programs can meet the specification – which therefore requires specific criteria to choose between them. Such criteria are called inductive bias, and an IPS system can only generate a certain proper subset of all (computable) functions of some domain, either because its language is restricted, or because its operators are not able to reach each program (which then constitutes a restriction bias). The order in which the problem space is explored and hence the ordering of solutions is the preference bias; it can be modeled as a probability distribution over the program space.

Future Areas of Research

While Ethereum remains the most widely adopted blockchain platform for supporting smart contracts, it is currently limited in throughput (TPS). The first version of Howdoo will be implemented on Ethereum, with the expectation that future versions of Ethereum will work towards and achieve enhanced scalability.

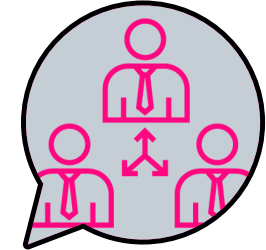In the unlikely event the Ethereum network does not address the scaling required to support Howdoo, alternative Blockchains or DAG technologies will be supported.
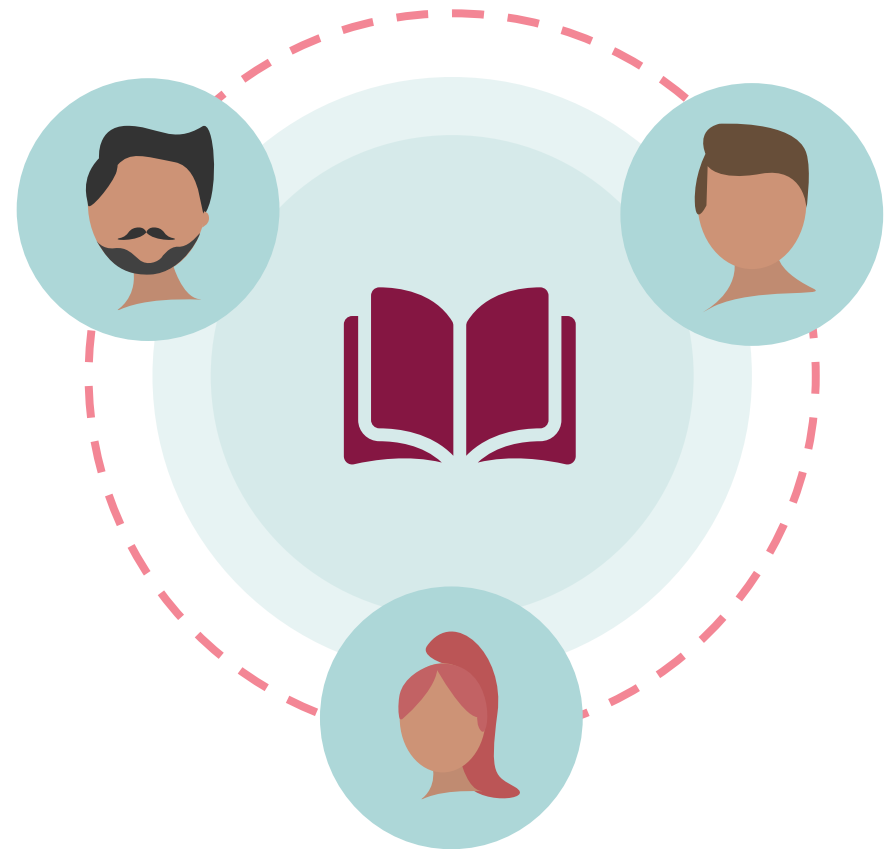
Team

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Chief Engagement Officer

Beth Lawton
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Additional links