Ethelo and the

eDemocracy Network DAO

White Paper

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Glossary

API & SDK Toolkit

An A.P.I., Application Programming Interface, is an interface that allows software to interact with other software. Designers think of it as a Rosetta Stone or tablet by which two vastly different languages can be translated and transferred for mutual understanding.

SDK toolkit, Software Development Kit, is a set of tools; libraries, documentation, code samples, processes and guides that allow developers to create software applications on a specific platform.

If API can be thought of as a set of building blocks, an SDK Toolkit is a workshop facilitating creation outside the scopes of what an API allows.

The Birth of Crypto Community: History in Brief

In 1992, computer scientists Cynthia Dwork and Moni Naor proposed the idea that solving computational puzzles could have value. Seventeen years later, but only one year after the 2008 stock -market crash and largely as a result of a growing distrust of fractional -reserve banking which requires lending institutions to hold a percentage of clients funds in trust and available for immediate withdrawal, Satoshi Nakamoto (a presumed pseudonym) expanded their idea and posted a link to a paper detailing methods of peer to peer network described as a " system of electronic transactions without relying on trust". On 3. January 2009, Nakamoto mined the genesis block of bitcoin which carried a reward of 50 coins. The community was born.

Badges

Badges are a non-fungible token similar to diplomas. Badges may show proof of attendance at an event (Proof of Attendance Protocol or "POAP") or proof of learning or commitment to a particular tech stack. Badges often yield rewards for those who have earned them.

Crypto Community

Initially the community was comprised mostly of young people inspired by the possibility of developing an alternative to mainstream financial institutions. Soon this small community of cryptologists and computer scientists grew and became a network defined by no borders. Members are located across geographic borders in virtually every country and territory. Members include miners (see below), computer scientists, computer programmers, designers, traders, and millions of investors. Even as they work to develop an ever more sophisticated " system of electronic transactions that do not rely on trust, members are bound by a relation of trust and a commitment to decentralized governance and transparency.

DeFi

Defi is an acronym meaning decentralized finance.

Digital Assets

All assets used by the crypto community are virtual assets that utilize an advanced encryption technique that assures the authenticity of crypto-assets by rendering both counterfeiting and double- spending impossible.

Cryptocurrency & Tokens are the two main types of digital assets.

Crypto-currency is the native asset of a blockchain. New currency can only be "mined" (see below). Tokens are created as part of a platform that is built on an existing blockchain. Both cryptocurrency and tokens can be stored and exchanged.

Digital Wallet

A digital wallet, also known as an e-wallet is a device, online service or software that allows one party to make electronic transactions with another party. Such transactions may include purchasing items on- line, depositing or withdrawing money to and from bank accounts. Wallets can also store and retrieve a user's health and library card and driver's license.

Wallets can be 'hot" meaning that they are connected to the net or cold. Cold wallets are offline and mostly used for storing keys or data.

Newly designed wallets can authenticate user's credentials. They can verify age and address. They can hold and present travel documentation, concert tickets etc. A digital wallet can also store private keys for cryptocurrencies.

Distributed Autonomous Organization DAO

The DAO exists as a set of contractual arrangements that often reside on the Ethereum blockchain. In the original form launched in April, 2016, the DAO did not have a physical address nor people in designated roles. By removing power from directors and placing it in the hands of owners, the DAO wished to prevent various abuses of power and corruption which they claimed were rampant in the mainstream corporate world.

The DAO is intended as a "hub" that distributes funds to projects submitted by "contractors" and voted on by investors who use digital- share-tokens to vote. Profits flow back to stakeholders.

Frictionless

An ideal trading environment in which there are no costs or other restraints on transactions.

Hard coding

Hard coding refers to the practice of embedding data directly into the source code as opposed to obtaining the data from external sources or generating it at runtime.

Holochain

Holochain is positioned as an alternative to the blockchain. It gives developers a framework for creating decentralized applications while avoiding the need to keep a global consensus. Instead, Holochain uses an

agent system in which each agent keeps a private fork. This avoids scalability problems that have plagued blockchain.

Mining / Blockchain

To “mine for a coin” is a task performed by crypto- miner, using a “mining rig” which is a suitably powerful computer capable of rapidly carrying out very specific computations required for sustaining the trustworthiness and data- integrity of the shared ledger- which accounts for all of the cryptocurrency’s transaction. The possibility of successfully mining a valuable coin offers an incentive to the miners to perform the work of sustaining the decentralized computing infrastructure on which the existence of the currency depends. Different cryptocurrencies define different mining algorithms- which represent a fertile subject for blockchain research – as the industry aims to improve on the initial mining protocols eg. to reduce energy consumption associated with mining; improve resistance to various kinds of network attacks and so forth. Early blockchain use a “ proof of work” algorithm which relies specifically on the immensity of the computational task required of miners. In blockchain networks, the miner earns a coin or token by successfully running the mining algorithm to arrive first at a specific pattern of output symbols. When this highly competitive task is accomplished, a new block of transitions can be added into the sequence of previously mined and validated blocks which form a chain of blocks that can be relied on in the absence of established inter- personal trust relationships. Any tampering with the numbers would break the pristine pattern generated by and encoded into the blockchain through the mining process.

Off Chain/On chain

An On-Chain transaction must be verified throughout the chain, agreed to by all signatories before it is authenticated. It is recorded in public space and can be accessed by all participants. None of this holds for “Off-Chain” transactions.

Consider two transactions. Assume that Alice sends 10 coins to Alex. An on- chain transaction will record the transaction and provide proof that Alice sent 10 coins and that Alex received 10 coins. An off-chain transaction will record that Alice sent something and that Alex received something. The actual substance sent and received will remain private and inaccessible, which certain users will find congenial. The off-line transaction will be quicker and almost free of charge.

Off chain does not necessarily mean not on the blockchain. It just means that it is not on the public blockchain.

On/off ramp

For anyone wishing to become involved in cryptocurrency, the first step is often to buy some. This requires trading common currency for digital assets and any service that provides exchange is known as “on ramp”

Off-ramp services provide digital asset holders a venue for exchanging cryptocurrency for “fiat” currency or for alternate cryptocurrencies.

Liquidity pool

A liquidity pool is a collection of funds locked in a smart contract. Liquidity pools are used to facilitate decentralized investment, trading, lending.

Smart contracts

The US National Institute of Standards and Technology describes a smart contract as a "collection of code and data that is deployed using cryptographically signed transactions on the blockchain network." A smart contract is not necessarily legally binding, but its constraints, commitments, terms and conditions are controlled and audited by the platform itself. The contract itself is secure and the executions are enforced. Contracts cannot be manipulated or altered after the fact.

Quadratic voting (not currently a feature of crypto- communities)

Quadratic voting is a collective decision- making procedure which involves individuals allocating votes to express the degree of their preferences rather than just the direction. Quadratic voting may proceed by allocating virtual or real tokens and permitting voters to allocate a percentage of tokens to each choice, as a way of demonstrating high or low priority. Quadratic voting can take place as a sliding scale of priority, which could be configured to allow users to commit a certain amount of fiat coin or chits. The Ethelo Decision Making platform supports quadratic voting and includes an algorithm which computes maximum consensus level based on varying priorities.

Value

The value of a coin or token refers to the rate of exchange governing the relation between various crypto-currencies and also the rate of exchange between one or another currency and hard currency (dollars, euros, rubles…) A coin or token may increase its value as it gains acceptance in the marketplace which employs fiat currencies (dollars, yen, rubles…)

Web 1.0, 2.0, 3.0 (in brief)

Both Web 1.0 & 2.0 focus on the "front end" of web, leaving the deep web to one side, W 3.0 redesigns the footprint, foundations, plumbing wiring.

World Wide Web 1.O is often referred to as "read only web". Websites were information-based and static. "Archie Query Form" was the first ever search engine. Lycos was launched in '94, Yahoo, in 95, Alta Vista in '96, Google in '98. Google's founders had a vision of a search engine that analyses web pages based on the number of times a search term appears.

Web 2.0 is "read/write" which means that it is both interactive, participatory but also exploitable by tech giants who hold individual signatures and can sell them to corporations who wish to target consumer habits and habits of mind. W 2.0 is currently ubiquitous and supports social media Facebook, Twitter, blogging, Paypal and so forth.

Web 3.0 introduces blockchain technology which allows users to travel with signatures which cannot be aggregated, marketed as assets. W3 permits financial transactions at supersonic speeds and at hugely discounted rates. It has spawned thousands of new business and business models.

Introduction

Ethelo intends to be the decision engine for DAO's and the governance infrastructure for "Web3." We are building the eDemocracy Network DAO to be the virtual Parthenon to empower DAO members from around the world and act as the connective tissue supporting a wide array of decentralized organizations.

Our mission is to empower people through eDemocracy to collectively address the great challenges facing humanity that our current political and economic systems are failing to solve.

Everyone has a stake in eDemocracy. Harnessing the benefits of DeFi and liquidity pools we will create incentive structures that help DAO's to leapfrog over dysfunctional existing governance and public engagement models.

DAOs

Distributed Autonomous Organizations (DAOs) are a new form of collective entity emerging from cryptocurrency and blockchain technology. According to a new MIT report, Mapping the Future of Legal Personality, within a DAO "...members could hold proprietary interests in the technology and its activities, share in the profits and capital growth, or merely exercise participation rights in decisions through voting mechanisms. In this context, there are clear arguments to regard the decentralized and autonomous technology arrangement as property in the public domain or as commons".

DAOs are communities built around assets on a blockchain and use "smart contracts" to hard-code finance and other organizational processes. These new "Web3" communities offer a radical new approach to organizing groups of people and large pools of capital towards a wide variety of business and non-profit objectives. Unlike second-generation social media and content platforms like Youtube and Facebook, Web3 offers trusted, decentralized platforms where people have real ownership and control of their identity, their content and their assets.

DAOs are fundamentally oriented towards decentralization and consensus based decision making. It is the core DNA of crypto technology and its great innovations harness the power of trustless decentralization. Most DAOs and many other organizations broadly seen as part of Web3, the next evolutionary step in the evolution of the internet, have a roadmap that includes further decentralization of power. Most DAOs are actively in the process of navigating how best to facilitate decentralization for their membership and their needs in light of the goals of the organization. There are no 'one size fits all' solutions. We intended to provide a flexible tool kit to enable a wide range of potential solutions and to work with DAO to iterate and explore.

The Problem

Digital governance has emerged as a key challenge for DAOs. While most DAOs aspire to a high level of decentralization their decision making processes and existing tools are limited.

Stakeholders can vote on proposals with tokens, and draft decisions off chain but there are various limitations to coin voting and a clear lack of fairness built into systems that too often can be dominated by "whales" who hold large volumes of tokens.

There are many questions about how to manage influence and fairness in this system. Ethereum founder Vitalik Bueterin highlighted key problems in his recent article, Beyond Coin Voting. Most notably he highlighted the potential for collusion and corruption within systems where votes are concentrated amongst a small number of participants. The power of crypto resides on its legitimacy, and process of governance that were fair - but noted the many problems with token voting as it is currently constituted.

The almost legendary failure of The DAO, the first distributed autonomous organization, cannot pass unremarked. By exploiting a flaw in the code a hacker stole $50M from the first distributed autonomous organization, which had surpassed all expectations by raising $100M in its initial offering. Because The DAO lacked the governance systems to revoke the transaction, Vitalik Buterin the founder of Ethereum did a hard fork of the Ethereum codebase - the first and only time Ethereum has been forked.

Pre-coded governance systems are unable to respond effectively to unanticipated situations ("contract incompleteness"). However, responding to unanticipated situations is just a line on the spectrum of governance requirements. Most decisions however are not life and death. As these organizations grow, there is an unending stream of operational decisions that must be made and managed. There is a need for integrated systems of decision making that can allow organizations to optimize the capabilities of decentralizations.

More broadly, decisions could be made much more effectively and fairly and in ways that increase participation and satisfaction with outcomes if we move beyond the current norm of binary yes, no decisions. Decision making is not just vote aggregation; it encompasses a number of stages from ideation, deliberation, formulation, ratification and actioning each with their own responsibilities, rules, and roles. All of this can be gamified to optimize for high levels of meaningful participation. We can harness technology to empower community members to collaboratively consider key attributes, weigh tradeoffs and consider a variety of contextual factors. Furthermore, we can provide digital systems of influence that go beyond personhood or number of tokens to support innovation in DAO governance structures and surface the voices of key stakeholders.

In traditional systems, we had systems like Robert's Rules or rules of legislative procedure. Now, we have the opportunity to radically reinvent these processes in a fully decentralized digital environment.

The Need

There is an immediate and pressing need. DAOs have large amounts of funding in treasuries they are mandated to distribute in support of community objectives both internally and externally. These newly born entities are "building the plane while they are flying it" when it comes to governance decision-making and in many cases there are significant growing pains particularly around treasury allocation and granting.

In Uniswap, a decentralized liquidity pool and one of the largest DAOs by treasury size, the overwhelming majority of tokens are held by a single investor who delegates it out to representatives. In Bankless DAO there are many different groups and organizations but there is not yet a consistent methodology for deciding on compensation or project management. Both are accomplishing a tremendous amount already but it is still very early for these organizations and many more and their growth and effectiveness could be supercharged with better tools and structures.

DAOs are mandated to make decisions in a decentralized way. In some cases, that requirement is baked into the constituting documents, for example;

- “In the future, control of [fund for maintenance and development of the platform] will be further decentralized [away from closely held company] into an onchain smart contract system." Gelato Whitepaper

The very decentralization of DAOs has exposed problems of governance capacity and unanticipated situations have demonstrated the inherent incompleteness of predetermined contracts. They are in need of legitimate, credibly neutral modes of responding to situations in a decentralized manner.

These challenges are present in a variety of decision making processes within DAOs

- Treasury management
- Budgeting and finance
- Grants and retroactive public good grants

There is a broader need for governance and decision making processes for

- Strategic decisions
    - tokenomic policy (such as voting on the total supply of tokens minted)
    - responses to emergent challenges
    - hard and soft fork debates at major impasses
- Operations
    - hiring decisions
    - accountability
    - event planning
    - performance assessment
        - compensation

Moreover many DAOs are experimenting with new models of community and incentive systems. Each has a different approach. There is a great potential for governance innovation in this space that needs to be supported with flexible systems and toolsets.

There is a broader need to improve our democratic and public decision making, which has shown fault lines in the complexity of modern life. See Appendix 2: The Need to Reform Democracy

The Opportunity

To become integral governance infrastructure for all DAOs

To provide DAOs with an advanced decision methodology that harnesses distributed intelligence of groups to reach strong decisions. This approach will incorporate Ethelo’s unique engine, in particular its approach to scenario analysis, fairness, and social factors such as gamification, reputation and liquid trust - an advanced form of influence delegation.

To bring the technology infrastructure created to support DAOs to the public decision making space, provided authenticated, election-level accuracy of large group decision-making to mainstream democracy.

There is an opportunity to accelerate the impact of decentralized public decision making processes on political decisions. Consider the impact of accurate polls on the actions of politicians. As leading providers in this market, we see the democratic power of hosting large, representative public deliberations using proof of humanity ID and writing those results of those processes to the immutable record of the blockchain.

There is moreover a broader need to weave decision modalities and processes into an overarching governance framework than can operate inside and between DAOs.

We will be building our tech for DAO communities, and at the same time we will continue to serve the public market and bridge that technology to government and public decision making.

Market and Business Model

Summary: In the beginning, we will offer simple on-and-off ramps to bespoke applications of the existing technology. In the medium and long term we will release a Web3 SDK toolkit and open API for custom smart contract integration. We will provide an open source library of interlocking decision nodes and flows that can fuel a revolution in governance flexibility and innovation.

Initial Target Market

We will start with current relationships with key DAOs.

- We are exploring opportunities to help Bankless DAO with granting decisions and potentially other internal decision making processes
- We are talking to Gitcoin DAO about the use of the Ethelo platform for strategic planning and grant allocation decisions
- We have a proposal before Uniswap to fund the use of the Ethelo platform

We will make the most of these relationships to hone our understanding of the market and feel pressing needs. We will begin with Web3 onramps and offramps, connecting to Snapshot and others for smart contract execution of bespoke implementations. We will provide custom configurations but move quickly to providing general templated solutions such as:

- A granting/funding product which will allow DAOs to stake funds with Ethelo for deliberation and distribution.

- Note that this is not limited to DAOs but any crypto currency with a treasury intended for projects that support the development of the crypto ecosystem.

- We can so offer escrow with release based on assessment of performance, using Ethelo in a subsequent group decision to evaluate performance,

- Other applications could include development of compensation formulas, selection of people to fill roles in different decision processes

The early discovery stage will focus on key partnerships with a revenue model based around grants, special projects and partnerships.

Go-to-Market

We will move to provide a general governance solution for decision and influence management. In its current form, the Ethelo platform, templates and configuration panel make it reasonably easy to set up decision processes addressing a wide range of challenges. Specific DAO decisions Ethelo can already support include;

- granting and project funding
- tokenomic policy
- treasury allocation, distribution and minting decisions
- budgeting and finance
- compensation formulas
- hard and soft forks
- public good awards

As well as general decisions;

- strategic direction
- project evaluation
- internal budgeting
- delegate selection
- hiring decisions
- event planning
- performance assessment

We will position Ethelo as a custom governance service provider, building what people want but lending advice too. We will learn lessons as we go, and use the best practices in our own governance infrastructure, the eDemocracy Network DAO.

We will evolve the platform in the direction of providing flexible, modular tools for governance, rather than a specific governance formula. Ethelo is already a highly configurable platform that can support experimentation and governance innovation. We will release a Web3 SDK toolkit and open API for custom smart contract integration with the Ethereum blockchain. We host an open source library of interlocking decision tools, nodes and flows that can fuel a revolution in governance flexibility and innovation.

The eDemocracy Network will provide a portal and user interface for identity and decision management, as well as social network functionality. We provide tools and systems for the gamification of deliberation and decision participation. We will combine social functionality such as human identity, roles, influence, compensation, delegation, and much more all enabled by Web3.

We will weave DAOs together with shared technology and best practices we develop into a larger community of DAOs united by a common governance framework. Holochain technology will be an important connective tissue, a middle layer passing information between blockchains. We will support decision-making across DAOs to enable meta-DAO combines.

We will bring this decentralized decision technology to public decisions by government institutions. We currently provide outreach services bringing large representative samples to local government decision processes. We will expand this service by providing samples of authenticated humans, and enable local governments to make legitimate political decisions on the chain. This ability will not be limited to governments however.

We will provide crowdfunding technology to fund grassroots processes seeking to initiate political decisions. We will provide group decision technology to emerging decentralized political parties who are making decisions on the chain with very large groups. We will decentralize the ability to make legitimate, representative, democratic decisions on public issues.

Holochain

Holochain offers a number of key technology advantages that make it a great fit for Ethelo's eDemocracy mandate.

Tamper-proof: We have been looking at systems for immutable vote storage for many years now, and have even built an MVP on Ethereum. We want a solution to storing vote information that can be recalled and verified.

Frictionlessness: The ability of Holochain to provide a decentralized ledger without requiring gas is a valuable asset. Although new proof of stake systems such as Cardano - and soon Ethereum - are addressing the energy consumption problem of blockchains, Holochain manages peer validation without requiring network-wide consensus. This is crucial for registering data pertaining to deliberation and other non-transactional social processes efficiently.

Personal Information Control: We want ways for people to have greater control over their personal information, and the ability to share permissions to that information across different decision processes. Holochain's architecture natively creates user-specific "source chains" that store such information, and the Holochain ecosystem is quickly moving to accommodate demand for context-rich data portability. Holochain is therefore complimentary to the flow of data we facilitate for participants in our public engagement processes.

Decentralization: Fundamentally we want to decentralize democratic decision processes so that they cannot be interrupted and can exist as a layer on existing personal devices. We want to provide people with immutable, truly decentralized and transparent public decision making processes.

- Imagine a community in China or Egypt or elsewhere where there is unrest trying to discuss a new public policy or a major project. With Ethelo and Holochain they now have a way to communicate with each other, as well as the government and companies, that is trustworthy, that

couldn't be taken down by the authorities and the results can be accessible to all who want to see them.

- Now imagine that at scale world wide for any range of decisions a group of people want to make fairly. At the ideological level and the practical level of scalability and flexibility working with Holochain just makes sense for Ethelo.

Open Source

A patent for the Ethelo algorithm and engine was granted in 2017 (USPTO Patent No. 9,727,883) The primary purpose of the patent is protective. Our goal is to open source the Ethelo engine under an Affero Copyleft license. We will also provide an Open API to the Ethelo engine and support a community of developers interested in optimizing the Ethelo engine code and associated ecosystem.

We retained Andrew and Lena Hall of Hall Law (a leading San Francisco open source law firm) to advise us on the best approach to open sourcing the Ethelo platform in 2017. With their help we developed a plan to Open Source the Ethelo Engine under an Affero Copyleft license. They also assisted us in drafting an Affero GPL, Contributors License Agreement, and Copyright Notice.

Optimizing the Engine is currently the focus of our research efforts with University of Waterloo. We will also provide an optimized, scaled technology stack which provides a public API to the Engine. The Engine is currently running on a Kubernetes system optimized on Google Cloud and AWS; when Holochain reaches scale it will be decentralized.

We will generate revenue from provision of the Engine API and dApps. We will provide a library of tools, templates and platform infrastructure. and provide free access to that API for developers utilizing the Ethelo engine code for democratic purposes. It will also provide access to our identity system, liquid trust network, social feed and decision management dashboard.

We envisage a compensation strategy for contributors to both the core Ethelo engine and the ecosystem, using funds from the Treasury.

Token Economy

The fundamental basis of the token economy is the value that comes from making good, fair, broadly supported decisions in an inclusive and participatory manner. This includes the legitimacy and social license needed to execute on those decisions and normalize adherence. Thelo tokens can be used to fund Ethelo processes and incentivize quality participation that, in combination with the Ethelo technology, enables great decisions.

The value of good decisions is captured in the delta between having a problem and having a solution. People come together to make decisions when they face a difficult, important problem together. Those decisions can go very well, or very poorly. However, a clear, effective, fair decision with broad support and buy-in from the group is generally a recipe for success. Therefore, the value of a good decision well made is generally the value of success. Included in that value are the social fibers of fairness and consensus, legitimacy, unity and community alignment.

For example: What would be the value of a broadly supported, legitimate group decision - one that included participation from 1 billion humans from around the world - on mandatory actions for climate change? This is less than the reach of Facebook at 36% or almost 3 billion people.

Our token economy will be geared towards the provision of governance technology and social incentive frameworks for productive participation and effective decision making. We will position ourselves as experts in incentivizing and harnessing participation that increases the value of the decision processes and outcomes. We will specialize in producing decision processes that result in smart, fair outcomes and consensus.

Governance

Every human who registers for an Ethelo decision process gets a membership in eDemocracy Network DAO. The eDemocracy Network membership is the governance token (an Ethereum ERC-20 token). For decision participants, their membership in the DAO will be where they hold important badges, roles, and reputation assets used in Ethelo decisions.

The cultural purpose of eDemocracy DAO will be to promote governance innovation in the Web3 space. We want to become a guild of governance services and innovation. Along with a technology platform and services, we will also offer special badges and certifications for people who provide democracy services, such as configuration, moderation or facilitation, enabling them to earn money supporting processes.

The eDemocracy DAO itself will be a cutting edge demonstration of tools and also the power of coordinated social networks in decentralized decision making. The full decentralization of decision making capability will be implemented over stages as the membership grows and key governance technology comes online and norms are established.

The eDemocracy DAO will be responsible for allocating funds accumulating in the treasury or general DAO protocols and policies. The eDemocracy DAO will distribute funds in treasury for various purposes;

- To support development of platform and services
- Rewarding awesome people and participation with airdrops
- Big Questions : funding large representative assemblies that answer public policy questions.
- Expand the reach and impact of eDemocracy to new jurisdictions

Badges

Badges will be inherently tied to personal profiles in our DAO. Badges are (generally) non-transferable reputation assets earned by participation in decision processes, or that people bring to decision processes. Once attached they cannot be transferred, or there may be restrictions on transfer (such as roles).

Badges will recognize a variety of different kinds of merit, role, and expertise in decision making. We will recognize professional certifications eg. requiring multisig. We also provide a customizable framework for incentivizing different kinds of participation on the platform. We will provide a framework for tracking decision roles and participation compatible with all DAOs and which can bridge different DAOs.

Basic badges earned during a decision process might include

- Completion of process
- Broadly liked, good comments
- Delegation and influent sharing
- Support services

Badges give people access to certain rooms, roles, and earning privileges. It may be that in order to hold some roles (such as service provision for fee) the holder must provide a stake as a guarantee.

We will provide a variety of ways to couple rewards and participation. We expect that in many cases the compensation for positive participation will occur at the end of a process, according to some protocol or distribution formula set at the beginning or agreed to at the end.

Bodies and Decisions

Each DAO and any sub-committees with a decision-making mandate will be represented uniquely on the Ethelo platform with an NFT/smart contract which will encode a jurisdiction, membership and decision protocols.They may include governance operating processes. Badges will be required to participate in decision making associated with certain bodies, or they may set out the roles and influence level in that process.

Decisions will result in a kind of NFT which will be encoded into a decentralized decision Registry that Ethelo will maintain across several blockchains including Holochain and Ethereum. Decision NFTs will contain not only a record of the deliberations and outcome, but also funds in escrow and conditions for release (eg. on achievement of decision outcome). Anyone can “audit” a decision by accessing its corresponding NFT in the Registry and validating the votes.

It would be possible to own and sell Decision NFTs. A decision might be “owned” by whomever is responsible for executing on it.

Influence and Fairness

There is currently a debate in the DAO community around one-person-one-vote versus one-token-one-vote processes. Quadratic voting, where voting power grows as the square root of the number of tokens, has the benefit of punishing attempts to dominate processes but it does not fully address all issues created by disparities in holdings.

Ethelo is compatible with Quadratic Voting, and can support any formula for allocating influence. Moreover, Ethelo supports procedural fairness in an altogether new way; by using scenario analysis and finding outcomes where satisfaction is distributed equitably. This enables fairness to be integrated into the deliberation process by which solution options are proposed - not just voted on. Moreover, the level of fairness can be customized for different processes - even selected by the participants themselves.

Delegation

Forms of delegation have already been implemented on DAOs such as Uniswap. An advanced form of delegation called liquid democracy allows voters to delegate their votes to specific people depending on the issue, and retract it immediately if they are unsatisfied with the performance of the delegate. Generally, Delegates have certain duties above being a mere participant - such as sharing their voting

information, and perhaps providing reasons. This highly flexible and responsive mode of delegation is a technological advance on the static nature of traditional representative governance.

Liquid democracy is not the end of the road however. Ethelo's multi-attribute decision framework allows the principles of liquid democracy to be extended and applied in a highly customizable way, among different groups of delegates depending on the issue or criteria.

This system is discussed in more detail below, in Liquid Trust. In summary;

Traditional voting counts the influence of voters as scalars - 1 person, one vote. There are various ways of aggregating this vote - majority vote, plurality, run-off - but the essential result is the same; the result with the most votes wins. Ethelo on the other hand views a decision as an (often large) space of scenarios, and represents the intention of voters as vectors; composed of real numbers between -1 and 1 for each option which could belong to a scenario, with the unit length of that vector being 1. This vector (called the "influent function") is constructed heuristically based on the scores and weights the participant assigns to different options, issues, criteria and other decision parameters as they move through the Ethelo decision process. It is applied, together with constraints, to generate a further vector which describes the participant's probable support for each potential decision outcome.

This multi-dimensional nature of the influent function allows voter influence to be delegated in interesting and new ways. Liquid Trust allows a voter to create a full influent function by voting on only a subset of the decision components, drawing from the influent functions of trusted Delegates to supply the missing data. For example;

- A voter can assign a "trust weight" to a number of delegates they like. Then by weighted vector addition and renormalization, we can build a new influent function which is essentially the weighted sum of the votes of the chosen delegates, with the level of trust accorded to each delegate determining how much weight they were given in the new influent function. Thus, rather than delegating to a single person, a participant can delegate to a group.

- Delegates can be assessed by their expertise in one or more of the issues or criteria used in the decision. Then, rather than voting on the delegates themselves, a participant can simply weigh the importance of the issues or criteria, perhaps identifying a subgroup of delegates, and a new influent can be created based on the expertise of some or all those delegates on those issues or criteria.

For DAOs worried about accountability of such systems, a "ratification" stage can be required before a participant can submit a vote created by delegation.

Thelo Token

The Thelo token is a utility token, used to rent "chairs" in Ethelo group decision processes. The more people in a process, the more chairs will be needed. There will be a "freemium" account where up to a certain number of chairs are free.

Once paid, Thelo is used for three purposes;

- to power the Ethelo engine and pay for any services;

- to compensate participants through the incentive system;
- to empower change through eDemocracy

Essentially groups buy or provide Thelo to power the Ethelo platform and participants are rewarded in Thelo for their productive effort in the decision processes.

When a decision process is initiated, a portion of the Thelo is set aside to be paid to participants on completion of the process. How that Thelo is paid out would be based on some gamification of participation, enabling participants to earn non-transferable badges and tokens for their contribution to reaching a good decision outcome;

- Participation: good comments that support deliberation, good ideas, any kind of shared feedback but with a focus on activity that promotes a good decision, eg. comments that get likes from people across the spectrum.

- Coordination: filling key roles in the process, such as comment moderation, fact-checking, outreach etc. Those filling such roles may have to provide a forfeitable stake if there is a responsibility attached.

- Delegation: Experts of influencers acting as Delegates who share their votes and reasoning and help shape the outcome through reputation and networks of trust.

We can also implement systems of collective reward, for example rewarding all participants if a decision outcome is found which has broad support.

Different DAOs will be able to customize their own approach, but we will offer a flexible, overarching framework. DAOs can stake additional amounts, either in Thelo or their own currency, to reward participation which can be distributed at the end of a process based on badges or other measures of participation. Participants and observers might also add additional rewards, if the decision process is significant.

Alternative to fees similar to chair rental, we might allow DAOs to pay the cost of using Ethelo by providing a stake, similar to a refundable deposit. In some cases, Ethelo might hold the stake for disbursement to grant recipients, if it is a granting process. While the stake is held, interest generated from liquidity pools could be used to for pay platform costs and participants rewards.

We will focus on supporting a broad variety of strategies for compensating participants with both liquid and non-liquid rewards. We will also support protocols that allow participants to reward each other during decision processes:

- Tipping others;
- Pumping posts;
- Donating to decision processes (see P2P fundraising);
- Also; staking to spread or earn trust.

As a social purpose DAO, a portion of all Thelo paid to use Ethelo will be placed in a special eDemocracy Pool. eDemocracy members can vote on Big Questions that those funds would be used to answer, using

digital democracy consultation processes. Members will be able to fundraise Thelo from other members to fund public decision processes. There may be funding for other initiatives to advance eDemocracy.

Ethelo

Ethelo Background

Ethelo processes have won various industry awards and the technology has been ranked the #1 digital democracy platform in the world for the past two years. We are also a certified B-Corp and were recently named "Best for the World" B-Corp in Governance Impact.

More than $10B has been allocated by various government bodies using Ethelo including municipal budgets, major projects and grants. More than 150 customers including local governments, businesses, nonprofits, health agencies, universities, indigenous communities, housing associations, foundations and the Canadian government. Ethelo has worked with approximately 100k participants across 400 decisions.

We were founded in 2011 as a two-part social enterprise, composed of Ethelo (a company) and the eDemocracy Network (an NGO). We also have a charitable foundation, the eDemocracy Research Foundation, which receives grants and issues tax receipts.

We have a "Standing Order and Supply Arrangement" with the government of Canada, which enables purchasing without an RFP. Ethelo has a "Reliable" security rating and received a 9/10 evaluation rating in the federal Government's "Built in Canada" innovation program.

The Ethelo team has tens of thousands of hours of hands-on experience managing digital decision making processes and public engagement. No one is better positioned than Ethelo to help DAOs leapfrog over the limits of majority voting to vastly better approaches consensus and collective action.

An eDemocracy Leader

The Network's "eDemocracy Webinar" series has featured political and indigenous leaders from across Canada and the US. Through these webinars, our eDemocracy Blog and our Masterclass series we reach thousands of local government officials.

We prioritize processes around climate democracy. Ethelo has also been used for water conservation, forest preservation, clean energy transition, and environmental planning. More than a dozen communities have used our unique "Carbon Budgeting" solution to create community plans that meet GHG reduction targets.

A recent pilot project was our 2021 Canadian "green recovery" budget whose results were presented to the Canadian Minister of Finance. Funded by grants and donations, participants created a 10 year balanced budget for Canada that met the Paris Accord target while creating 1 million green jobs.

Mission and Vision

Our mission is to empower people through eDemocracy to collectively address the great challenges facing humanity that our current political and economic systems are failing to solve.

Ethelo is a world leader not only in group decision technology, but also in advancing the cause of decentralized democracy through our nonprofit eDemocracy Network and the eDemocracy Research Foundation, which promote cutting edge engagements such as our Carbon Budget and Green Recovery Budget processes that blend traditional community organizing with our innovative technology.

Applications

This Creekside Condo Story related one of our early engagements and the quickest path to understanding how Ethelo works in practice. For more in depth explanation, read What is Ethelo, or our White Paper

The participant experience is that of going through an online workflow, interacting with the tools and other participants, and arriving at a preferred solution which is then submitted as a vote. Often there is an opportunity to see the group results.

The Ethelo Granting Video (7min) explains how the technology can be applied to granting, with a corresponding Interactive Demo. We have also created a simple version of the Ethelo granting template for Gitcoin Grants, skinned to the "look" of Discord, a popular messaging app among DAOs: Gitcoin Grant Round 11.

Granting is only one application of Ethelo. The website has more than 3 dozen case studies describing how Ethelo has been used for budgeting and finance, governance and policy, planning, operations, design and conflict resolution - with dozens of specific applications..

The Ethelo Applications list is a fairly exhaustive list of different types of decisions for which Ethelo has been used. A number of applications are demonstrated on our video page or solutions page

Current Business Model

We provide a full-service, integrated "eDemocracy" solution that combines project-based or annual licenses to the technology with a suite of professional services including custom technology configuration, content development, moderation, data analysis and validation and custom reporting. We also provide zoom-based deliberative processes accompanying the digital engagement processes.

We charge $5k to $20k per decision process (average $10k), or $10k - $40k per annual license, with professional services billed hourly.

We provide "Outreach Services" to recruit large (1000+) diverse samples of participants for public processes. We utilize both offline and online targeted advertising to ensure demographically representative participation and have continuously optimized the platform to optimize completion rates.

We also receive, through our partner eDemocracy Research Foundation, funding from other foundations such as McConnell Foundation or Trottier Foundation for projects qualifying for charitable funding such as our climate work or work with indigenous communities.

Technology

Unique Benefits

The Ethelo technology combines a rugged, well-tested and user-friendly interface with a cutting edge data analysis engine for identifying good decision outcomes.

Many people think of group decision making as voting. However, voting is in many ways the “final act.” Before voting there is a process of generation, deliberation and aggregation that almost completely determines the success or not of the voting stage. The oft-overlooked question is “what is voted upon?” Our current democratic systems distill choices down to simple alternatives or small sets of options. This choice procedure promotes outcomes that appeal to distinct groups, and so outcomes which only require 50% support (or even less) can succeed - creating winners and losers. This inevitably leads to polarization.

The question of “who chooses the options which are put to vote” quickly exposes the shallowness of current decentralized decision making. This was noted in XX talk .

Ethelo on the other hand reaches behind the voting stage to the deliberation process that leads to proposals. It is able to break decisions down into a range of parameters and engage people in finding a proposal that appeals to a broad cross-section, maximizing support and minimizing polarization.

There are three unique benefits to the Ethelo algorithm and engine:

1. **Versatility:** Ethelo provides a powerful multi-criteria decision making framework that uses a broad lexicon of parameters to describe decisions and complex spaces of potential scenarios.

2. **Fairness:** Ethelo is able to integrate participant preferences across many dimensions to identify specific, actionable outcomes with broadly, evenly distributed support. It identifies an optimized consensus.

3. **Liquid trust:** Ethelo provides participants a wide variety of ways to engage in decision making from direct voting to a liquid (fractionalizable, reversible) delegation of influence relying on factors such as reputation, values, priorities and much more.

Web Platform

The Ethelo platform consists of an admin panel that allows configuration of an almost infinite variety of decision workflows. The most common decisions have been compiled into templates, which are stored in our library and customized for specific processes.

Ethelo platform has been rigorously tested in the field by a large variety of individuals and devices, and continuously improved over almost a decade of active service:

- Accessible, rigorous WCAG2 tested
- Security rated, regularly penetration tested.
- Reliable processes for authenticating and validating anonymous participation
- An industry-leading collective decision feature package

- See Ethelo Features page

Ethelo built an MVP integration into Ethereum in 2017 to test the viability of writing a decision outcome to the blockchain.

Decision Engine

Underneath the Ethelo platform is the Ethelo engine, a unique multi-parameter decision algorithm and solver. It combines decision factors such as options, issues, criteria, constraints, influence, and fairness to develop a space of potential scenarios. Those scenarios are then evaluated and ranked according to the aggregated analysis of participants, prioritizing fairness in the distribution of satisfaction (see How Ethelo Works).

Ethelo uses a custom, scalable kubernetes architecture with an API to an optimized C++ computing engine. The engine has undergone significant improvements over the past decade, thanks to the efforts of a talented team of mathematicians and computer engineers. In the first implementation, a "brute force" approach would take upwards of 24 hours to search a 1M scenario space, even with high powered servers. In time, we moved to a Mixed Integer Nonlinear Programming approach, using a Bonman solver together with a streamlined version of the algorithm. This engine is built to accommodate high traffic volume, which means analyzing millions of scenarios for thousands of participants across many processes, in real time with delays of less than 1 second.

The Ethelo algorithm was patented in the USA in 2017. Optimizing the computing engine which solves the algorithm (an NP Complete problem) is the subject of an ongoing research partnership with the University of Waterloo.

Theoretical Framework

"Ethelo" is a word from ancient Greek that means "intention" or "willpower." The Ethelo framework breaks down complex problems into smaller problems that can be solved collectively, identifying outcomes that will focus and unite the disparate intentions of unique individuals into a single collective intention.

Ethelo treats each participant's latent desires as a quantifiable energy that can be modelled across a large space of potential decision scenarios. An ideal group decision, in this approach, is one in which the greatest amount of intentional energy is conserved moving from the individual to the group. Importantly, in identifying an outcome that attracts the greatest support, this theory does not simply sum the individual levels of satisfaction but also looks to emergent factors such as fairness or inequality in the distribution of that satisfaction across individuals.

A "strong" decision in this theory is one that optimizes the available intentional energy by looking at both individual as well as collective factors such as fairness. Such decisions are "efficient" in ensuring that the greatest amount of potential intentional energy is conserved in the transition from the individual to the collective.

A Theory of Fairness

Ethelo theory is based on the work of John Rawls, a 20th century philosopher and social contract theorist. Rawls wrote about the importance of fairness in democracy. He devised a number of thought experiments such as the famous original position in which everyone is impartially situated as equals behind a veil of ignorance as they negotiate the social contract.

Central to Rawls' thinking was the balance that must be struck between personal satisfaction and ideas of fairness rooted in the distribution of satisfaction. As a matter of first principle, he argued, everyone will accept some degree of inequality if it means we do better collectively as a result - "a rising tide raises all boats." Rawls' conclusions about the degree of acceptable inequality, and how to strike the balance, have been the topic of much argument since. However, his basic framing of the social contract is an enduring legacy and has been described as the most important work in 20th century political philosophy.

Rawls' "Theory of Justice" was published in 1971, and "Justice as Fairness" was published in 1985. His philosophical intuition on the importance of fairness has since been validated empirically in the social sciences under the general heading of "social preferences" and "inequity aversion." Studies show that people will reject unfair outcomes even when they would otherwise benefit. Likewise, they will support outcomes they dislike if the process was seen as fair. This powerful phenomenon has been documented in both human and animal experiments.

Ethelo is a practical solution to the philosophical and social challenge of making group decisions that balance individual factors and collective factors such as inequity aversion.

For more on Rawls and Ethelo visit: https://blog.ethelo.org/john-rawls-and-ethelo

Morphological Analysis

Morphological analysis, which means "the study of forms" is well established as a method for modelling structural relationships between objects and phenomena in a number of scientific fields including botany, linguistics, geology and mathematics as well as social problems including forecasting, defence planning and political problem-solving. A generalized version of the method was originally proposed by Swiss-American physicist and astronomer Fritz Zwicky (1898–1974).

Strong similarities in the basic conceptual framework between Ethelo theory and morphological analysis place them in the same family of analysis. However, Ethelo theory was developed independently and contains several concepts not found in any morphological framework. It is perhaps best framed as an extension of morphological analysis.

For more on Morphological Analysis vist: https://blog.ethelo.org/ethelo-and-morphological-analysis

Other Methods

Ethelo is compatible with various methods of allocating influence, including the Quadratic Method, and complements processes such as conjoint analysis, the Monte Carlo Method and decision trees. Ethelo is not affected by Arrow's Theorem.

Modelling Intention

Ethelo views a decision as an (often large) space of scenarios, and represents the intention of each voter as a vector that can be used to estimate their level of support for each of the potential scenarios. This (often large) vector - called the "influent function" - is constructed heuristically based on the scores and weights the participant assigns to different options, issues, criteria and other decision parameters as they move through the Ethelo decision process.

Ethelo uses custom feedback tools to gather the voting data needed to model the influent function of each participant. Rather than trying to gather information about every potential outcome (generally impossible as there can be millions in complex decisions) it represents a complex decision as a much smaller set of key sub-decisions - such as scoring options or weighting issues or criteria. This information, applied combinatorially, is enough to extrapolate a participants level of support for all the outcomes.

Ethelo takes the approach that the preferences of a group can be represented in the same way as that for an individual; as a influent function over a space of outcomes. The goal in coming to a collective decision is preserving as much intentional energy as possible through the transition.

Optimizing Collective Energy

The influent function of a "collective" is created by aggregating the participants' influent functions in a way that balances individual factors (such as personal satisfaction) with collective factors (such as fairness in the distribution of satisfaction). In this way, Ethelo incorporates the thinking of John Rawls and the importance of fairness.

Ethelo models the collective energy available to support a potential outcome, as not being simply the sum of the various individuals' support for that outcome, but also as dependent on the distribution of support for that outcome. If the support is highly polarized, then there will be internal resistance to execution of the decision, energy will be lost, and it will be a "weak" decision. That is, the "intentional energy" behind a polarizing outcome will be reduced as a result of the polarization. On the other hand, if people in a group experience similar levels of support for an outcome, then it will be perceived as fair and the resulting intentional energy will increase due to the unity of sentiment. Or conversely, if the outcome is broadly opposed, the fact of consensus will deepen the opposition.

Ethelo is essentially a prioritization algorithm. It takes a set of the characteristics of all the potential decisions — which can be very large, limited only by the imagination — and distills that set down to a much smaller, internally consistent set of characteristics which describe a single decision scenario. If the process is successful, that resulting single decision is one that most effectively optimizes the available energy from the participants to render decisions that have broad levels of support across a constituent base.

Algorithm Procedure

The following is a technical description of the Ethelo algorithm and engine. It sets out the general framework of concepts necessary to understand Ethelo. There are some mathematical concepts, but no mathematics background is required, just some patience.

The Ethelo process divides decision making into three stages,

1. Ideation
2. Voting
3. Aggregation

There can also be included a fourth, formal stage of approval of the results of the Aggregation;

4. Ratification

Note this description is restricted to the conceptual structuring; it does not encompass such (critical, in real life) stages such as dialogue, roles, and formal procedures. It merely lays out such elements of decision making which can be instrumented and aggregated in the Ethelo process.

These four stages will be explained below with references to an example problem: the challenge of allocating an amount of money among a set of potential initiatives - a participatory granting process.

I. Ideation

Ideation here refers to defining the potential parameters of group decision to be made. These parameters include the underlying issues, options, constraints, and criteria that the Ethelo algorithm will use to create the online collaboration environment, the corresponding web tools, and the space of potential scenarios that this environment and tools will be used to explore.

1. Issues

“Issues” refer to a general breakdown of a decision into subtopics. Issues can be thought of as buckets within which specific proposals or “Options” are contained. For example, Issues might correspond to the different categories of grants, such as “International Aid”, “Homelessness”, “Relief of Poverty, and “Youth Issues”.

There is no limit to the number of issues Ethelo can accommodate, except the practical limit of time participants will be able to reasonably provide in doing the analysis.

2. Options

An “Option” is a specific action, or policy, which can be implemented as a part or facet of an overall decision. They are not whole decisions in themselves, but discrete and possibly abstract components that

are candidates for describing some aspect of a final decision. “Options” are categorized as “belonging” to an Issue. In the Granting example, options under the Issue “International Aid” include specific proposals such as “Books from Above”, “Green Sphere Alliance” and “Hot Sky Group”. Options can be described with varying levels of abstraction, from a title consisting of a few words, to a short summary, to a detailed description which might include supplementary materials.

Notes:

- If there is disagreement about what Options should belong to which Issue, the Ethelo algorithm can support each participant having their own, unique organization of Options into Issues.
- From a procedural perspective, it is sometimes preferable to start with an exhaustive list of proposed Options, and then develop a structure of Issues which categories them in a sensible way. The end result is the same.
- In some cases, the list of Issues is so long that it is difficult to work with. In that case, it is possible to impose a second or even third level of organization, where Issues are grouped into “Categories” and Categories grouped into “Chapters.” The naming convention is not important; the point here is that Ethelo supports hierarchical nesting of Issues.

In practice, Options are often determined — or at least approved —by a decision-maker who carries final authority. However, the ideas which become Options can come from anywhere and it is usually a good idea to cast a wide net. The Ethelo platform can be configured to allow participants to propose “suggestions” which can be converted to Options based on some threshold.

Options are the building blocks of decision-making. Any Outcome Scenario can be described as some combination of Options.

2a. Attributes

Each Option can be associated with a set of measurable, quantitative “Attributes” which further define the Option. For example, an Option might have a financial cost; in the granting example, the amount of money to fund the proposal. Attributes can be relatively abstract, such as the “feasibility” or “benefit” or “difficulty” of an Option; as long as they can be expressed as a quantity.

The attributes of an option can change in a stepped or continuous way, often tied to some other attribute. For example a grant proposal may have the attributed “cost,” which could increase or decrease depending on the number of staff or duration.

Scenario can also have attributes, determined by the Options that comprise that Scenario. We can further create new kinds of Scenario attributes based on relationships between Option attributes. For example, if an Option has both a “cost” and “revenue” characteristic, then a Scenario could have a “total cost” characteristic, which is the sum of the cost of each option (in the Scenario) minus the revenue of each option (in the Scenario)”

3. Constraints

Constraints are rules which limit which Options can appear together in a decision outcome. Constraints can be of various types;

- Logical Constraints

Logical constraints refer to relationships between Options that can be described using boolean logic. For example, “XOR” relationships where one and only one of a set of Options must appear in a decision outcome, either for logical or practical reasons. In the Grant example, perhaps two proposals came from the same organization - but there is a policy that no organization can win more than one grant, and so their two proposals would be in an OR relationship. Other logical relationships include necessary (B therefore A) and sufficient (A therefore B).

- Set-based Constraints:

In some cases, arriving at a decision will require choosing a discrete number of Options from a set of Options. For example, in the Grant example, there might be a policy of making at least one award in each of the 4 granting areas (International Aid, etc). Or perhaps the participants will vote on how many proposals should be awarded from each topic, in which case an option becomes a constraint. Ethelo supports set-based constraints such as “equals” “less than” “greater than” between # and #”. Scenarios for which these set-based constraints are not met would be excluded.

The list of Options which are the inputs to an Ethelo process can be divided into any number of overlapping or non-overlapping sets, each of which can be subject to its own set-based constraints.

- Calculated Constraints:

The Ethelo process allows the identification of decision outcomes which must obey quantitative restrictions such as budget, etc. These Calculated Constraints are generally tied to one or more Outcome Attributes. A Calculated Constraint is defined by creating a boundary condition that is used to determine whether a Scenario is valid. Boundary conditions are expressed as relations, for example “total cost < total budget” which are true or false for any given Scenario. Combinations of options for which the Boundary conditions are not met are excluded from the set of potential Outcomes.

Similar to above, attributes and boundary conditions can be subject to the Ethelo voting process.

4. Criteria

“Criteria” refer to frameworks of evaluation, or values, that will be applied by Participants to the different Options. These Criteria are expressed as polarities that translate to a numeric range, generally the range of [-100, 100] or [0, 100]. The default criteria is simply “Oppose v. Support”, where “totally oppose” equals -100 and “totally support” equals 100. This numeric range can equivalently be expressed as a [-1, 1] or [0, 1] range.

Often a single criteria is used to evaluate Options. However, multiple criteria can also be used. A set of multiple Criteria that is used in the Granting example includes “Collaboration,” “Replicability”, “Secured Co-Funding”, “Sustainability” and “Targets Root Cause.”

There might be a standard set of criteria that all participants apply, or participants might select their own set of criteria to apply in evaluating the Options. Different Criteria may be also used with different Options or Issues. Participants can select as many criteria as they wish, and these criteria do not need to be shared with other participants.

In some cases, it may be useful to group Criteria into “meta-criteria”. Similar to MCDM (Multi-Criteria Decision-Making) tools, Ethelo supports hierarchical nesting of Criteria.

II. Voting

The ideation process described above is a creative, non-competitive one; while some decisions need to be made, it is basically a generative, “divergent” process that prioritizes inclusion of options. The following stages (Voting and Evaluation) describe the convergent aspect of Ethelo where it uses evaluative and heuristic tools to reduce the very large set of possibilities down to a single, optimal group decision.

The goal of voting in the Ethelo process is to create an “Influent Function” for each Participant. An Influent Function is simply a set of scores, one for each of the Options. If there are 5 Options, then each Participant will emerge from the voting process with a “vote” in the form of a set [a,b,c,d,e] where a, b,c,d,e are each numbers corresponding to an Option.

Ethelo allows two types of voting.

Direct Voting

The Ethelo direct voting process consists of each participant assigning some quantitative scores to Options, via the application of a set of Criteria and a weighting of the Issues.

1. Evaluating Options

Each participant evaluates each Option by assessing, in their opinion, how well the Options stand under the application of one or more Criteria, on a scale [-100 to 100]. In this system, “-100” means that the Option falls on the negative pole of the Criteria, “0” means it is neutral, and “100” means the Option falls on the positive pole of the Criteria. Options will generally fall somewhere on the spectrum between the two extreme poles.

This [-100,100] scale can be simplified as a series of buttons, representing different points on a likert scale. In the Grantings example, five buttons are used corresponding to the values of [-100, -50, 0, 50,

100]. However many buttons are used is not important - Option voting can also be done using a sliding scale to allow any number to be selected.

A participant's evaluation of an Option can be expressed as a set of scores under each Criteria, called a "Criteria Score." In the Granting project, the Option "Books from Above," when evaluated under the three Criteria "Collaboration," "Replicability" and "Secured Co-funding," might result in a Criteria Score of [10, -10, 50].

2. Weighting Criteria

If only one piece of Criteria is used to evaluate Options, there is no need to weight it. However, if more than one Criteria is used, it will be necessary to assign relative weights to the Criteria on a scale of [0, 100]. These weights will be used, along with the Criteria Score, to assign an "Raw Score" to that Option for the Participant.

This is best illustrated with an example: the three Criteria "Collaboration," "Replicability" and "Secured Co-funding," described above might be assigned weights [20, 50, 40] respectively by the Participant. In that case,"Books from Above," would receive a Raw Score from the Participant of [10x20 + -10x50 + 50x40] = [200-500+2000] = 1700.

3. Weighting Issues

Along with weighting Criteria, each participant might also assign a weight to each Issue, on a scale of [0, 100] indicating the importance of that Issue to the Participant. This weight is used, in conjunction with the Raw Score, to define an Overall Score to the Option for the Participant.

For example, the Issues "International Aid", "Homelessness", and "Relief of Poverty," and "Youth Issues". might receive weightings [50, 10, 75, 40] by the participant. If "Books from Above" and "Green Sphere Alliance" were Options under the Issue "International Aid," and received Raw Scores of 20 and 15 respectively, then after the Issue weighting the Overall Scores would be [20x50] and [15x50] = 1000 and 750 respectively.

Note: As note above, Criteria can be nested, so that a meta-Criteria {A, B, C} may actually refer to a longer list of Criteria {a1, a2, a3, b1, b2, b3, c1, c2, c3 etc} where the Criteria can be applied and weighted, and the meta-Criteria can also be weighted. The same is true of Issues.

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Through the above process, each participant will have assigned each option an Overall Score which will be some positive or negative number. So, if there are 20 options, the participant's "vote" would be a series of 20 Overall Scores, each Overall Score corresponding to one of the Options. This series of Overall Scores will be referred to as the pre-normalized "Influent Function" of the Participant.

Liquid Trust

Ethelo allows an advanced form of liquid democracy, in which rather than voting directly on Options and Issues, Participants can choose other Participants they trust, and define their Influent Function by specifying how much they trust those Participants. Ethelo will then construct an Influent Function on their behalf drawing from the Influent Functions of those trusted Participants.

Ethelo allows participants to be very specific and granular about the distribution of their trust. Participants can specify how much they trust each person's expertise, not only with respect to different decisions but also with respect to the application of different Criteria and the understanding of different Issues in those decisions.

This "trust-based" approach allows Participants to engage intelligently in decision-making processes without being experts in the substance of the decision at hand, but rather by relying on social factors such reputation, relationships, statements, and shared connections. People are extremely effective at reaching conclusions about trust based on social factors, but also making decisions by weighting the importance of criteria or issues.

Current models of representative democracy rely heavily on collective wisdom, but it is undermined by the highly concentrated and generalized power of the representatives they elect. Ethelo allows the selection of many and diverse experts, and the delegation of influence to those experts in a much more granular and directed manner.

1. Assigning Trust

Ethelo allows a Participant to identify a group of Participants, {p1, p2,...,pn} and assign a "trust ranking" to each of those participants on a scale of [0, 100] corresponding to how much they are trusted by the Participant with respect to the decision at hand. Using this information, Ethelo can construct an Influent Function for the Participant by merging the trusted Participants' Influent Functions.

For example, if a given Participant Pat assigns three other Participants {p1, p2, p3} a trust factor of [40, 10, 70] respectively, then Ethelo can define a new Influent Function for Pat using vector addition; IF(Pat) = 40*IF(1)) + 10*IF(2) + 70*IF(3), where IF(1) = the Influent Function of Participant p1, etc.

2. Assigning Trust wrt different Issues

In the above, Participants indicated a general level of trust for other Participants. However, Ethelo also enables a Participant to create their Influent Function by specifying how much they trust the opinion of other Participants with respect to different Issues.

For example, a Participant may trust Participants p1, p2, p3 on the Issue of Cyber Warfare to an extent of [20, 30, 50] respectively. If those three Participants gave Overall Option Scores [.3, .5, .2] to the Option "Planning and Preparing", then Ethelo would attribute an Overall Score of [20 *.3 + 30 * .5 + 50 *.2] = 31 to the Participant for the "Planning and Preparing" Option.

There will still be a need for the Participant to assign a weight to the respective Issues. The Participant can do that themselves, or use the Trust methodology to arrive at a weighting based on the weightings assigned by any or all of the Delegates above, using weighted averages.

3. Assigning Trust wrt different Criteria

Ethelo further enables a Participant to create their Influent Function by specifying how much they trust other Participants in the application of different Criteria.

For example, a Participant may trust Participants p1, p2, p3 on the application of the "Enforceability" Criteria, to an extent of [50, 20, 40] respectively. For clarity, consider that a Participant's "Criteria Score" is a set of scores (vector), like an Influent Function, but restricted to the application of a particular Criteria to the Options. Ethelo can then draw from the Enforceability Criteria Scores of Participants p1, p2 and p3 to define a new Enforceability Criteria Score for the Participant equal to [50 * ECS(1) + 20 * ECS(2) + 40 * ECS(3)], where ECS(1) is the Enforceability Criteria Score of participant p1 etc.

There is still a need for the Participant to assign a weight to the respective Criteria. The Participant can do that themselves, or use the Trust methodology to arrive at a weighting based on the weightings assigned by any or all of the Participants above, using weighted averages.

4. Assigning Weights to Criteria and Issues

In the above examples, a Participant assigns a trust ranking to selected delegates. However, it is possible to crowd-source even this stage, by finding the average trust assigned to those delegates by all or some of the other participants. In that case, the Participant need only determine the weights of issues, and perhaps some characteristics of the group whose trust weights will be relied upon - for example, those holding certain badges.

5. Machine Learning and Delegation

Liquid Trust delegation can be expanded using AI Avatars, which can look at a broader variety of factors and unstructured data sets across many participants to make good predictions of participant preferences. Avatars would train to represent a participant in complex participatory processes by asking a optimized set of questions (eg. value-based or demographic questions) and using that information to identify correlations and make predictions drawing from big data provided by other participants and delegates. Machine learning can also identify which questions will have the greatest value in training such an avatar.

Democratic Equality

In a traditional democratic voting process such as majority vote or proportional representation, each participant is meant to have an equal influence. This "democratic principle" is observed by giving each person one and only one vote. However, often participants whose candidates lose in such processes find themselves with much less influence on the final result than participants whose candidates win. Thus, the

appearance of an equality of influence disguises a structural inequality: there are winners and losers and whoever voted for the winner had, in reality, more influence than those who voted for the loser.

Ethelo avoids the failure of traditional voting methods which allow winners and losers to have different levels of influence. It does this using a variety of methods.

Normalization

The mathematical impact each participant has on the Ethelo aggregation process (described below) is determined by the *sum of the absolute values* of the Participant's Option Scores. This is the "mathematical pressure" they are able to exert on the aggregation process.

In order to ensure a fair distribution of influence across the Participants, each Participant's Influent Function can be normalized, so that the sum of the absolute value of the Option Scores in their Influent Function is equal to 1. In many cases, this can be done by dividing each of the Option Scores by the sum of the absolute values of the Participant's Option Scores. For example, if a Participant's Influent Function is expressed as [-40, 35, 600, 21] then the divisor would be [40 + 35 + 600 + 21] = 696. The Normalized Influent Function would then be: [0.057, 0.05, .82, 0.03].

A slightly more complex normalization process using exponents is used in the Ethelo algorithm, due to the secondary objective of having all Option Scores be less than or equal to one for the purposes of Aggregation below.

Influence

After normalization, the Influent Functions of each Participant will have equal influence on the aggregation process.

Although democratic ideals often require the equality of influence, it is not always the case that equality = fairness. Sometimes, people are affected differently by decisions, or they may have different rights to participate in decisions due to pre-existing agreements or entitlements. In some DAO decision processes for example, having influence scale with the number of tokens held may be an important aspect of the social contract. In those cases, it is important to support non-equal distributions of influence in decisions.

Ethelo allows the non-equal distribution of influence among participants in decision-making quite simply, by multiplying Participants' normalized Influent Functions by some factor representing the amount of influence they should have in the process.

For example, if a Participant p1 is entitled to 4x as much influence as Participant p2 , then Ethelo can respect this agreement by multiplying p1's normalized Influent Function by 4.

Representative Accuracy

The ability to define levels of Influence makes Ethelo capable of ensuring equitable, representative outcomes even when participants in a given process are not representative of the larger population.

This demographic-corrective capability (when enabled) works as follows: For example, if 20 percent of the participants in a Ethelo process belong to a minority group, but that minority group comprises 30 percent of the population, Ethelo can increase the influence level of members of that minority group by 1.5x. The Influence level of other participants can also be adjusted to represent their true prevalence in the population. In this way, a non-representative vote sample can be corrected to show representative results.

III. Aggregation

As a result of the Voting process, each participant is associated with an Influent Function which has been normalized and adjusted as needed. The Ethelo algorithm will aggregate these Influent Functions by using them to evaluate a space of potential decisions scenarios, as follows:

1. Generating Scenarios

We define a "Potential Scenario" as some combination of Options, without regard to whether the Options are consistent with each other. We can express a Potential Scenario as a series of 1s and 0s, where "1" means an Option is present, and "0" means it is absent. For example, if we are dealing with a Decision that includes three Options in an ordered sequence Option 1, Option 2, Option 3, and Option 4 then, we can express every Potential Scenario as a series of four 1s and 0s, where "1" means an Option is present in the Scenario and 0 means the Option is not present. So, Potential Scenario [1, 1, 0, 0] would consist of Option 1 and Option 2, but not Option 3 or Option 4.

We can see that if there are four Options, then there are 2^4 = 16 Potential Scenarios. If there are 20 Options, then there will be 2^20 = 1,048,576 Potential Scenarios. It is clear that the space of Potential Scenarios can get very large if there is a significant number of Options. However, not all Scenarios will be valid, because they may violate different Constraints. For example if there is a constraint that Option 2 and Option 3 are mutually exclusive (cannot logically exist together) relationship, then Ethelo will eliminate any Scenarios of the form [n, 1, 1, n] where "n" could be either 1 or 0.

2. Scoring Scenarios Individually

A "Scenario Score" given by a Participant to a Scenario is calculated by combining the Option Scores in some way. Usually, that combination is done using simple addition. For example, if a Participant's Influent Function for a Decision consisting of four Options is [0.2, 0.3, 0.1, 0.4] then the Participant's Scenario Score for Scenario [1,0,1,1] would be 0.7.

While adding Option Scores is the obvious approach, the satisfaction derived from an Outcome is not always simply the sum of satisfaction derived from the component Options. In some cases, the Scenario Score is better calculated using the average Option Score ("quality is better than quantity"). In others, the

Option Scores will be multiplied by a Characteristic, such as cost, before being added together to reflect the greater value of more expensive Options.

- Real-Time Feedback

Ethelo is able to evaluate all the Scenarios using a Participant's vote information and corresponding Influent Function, and return their top-scoring Scenario with less than 1 second delay. This "Top Choice" feedback enables a Participant to adjust their scoring, weighting and trust allocation to ensure that the Influent Function they are creating is aligned with their intention.

For example, there may be constraints that restrict the potential Scenarios so that it is impossible for Participants to achieve their perfect Scenario. Ethelo allows participants to interactively optimize within these constraints, making tradeoffs by adjusting the various voting tools (option scoring, criteria weighting, issue weighting, trust assessments, etc.) until their favourite (if still imperfect) outcome appears in the "My Top Choice" panel.

4. Evaluating Scenarios Collectively

Ethelo is able to aggregate the Influent Functions of all the Participants over the space of all consistent Scenarios to find the best "group decision." It does this by evaluating each Scenario and assigning it a variety of metrics, the primary ranking metric being the "Ethelo Score" as described below. It is then able to present the best Scenarios in ranked order from the strongest group decision to the weakest group decision.

The defining aspect of Ethelo's aggregation methodology is that it looks not only at the average level of support for a scenario across a group, but also at the distribution of that support - in particular, the variance. Ethelo incorporates research from sociology and game theory that shows that similarity in levels of satisfaction, aka fairness, is a key determinant in the strength of group decisions.

Definitions:

a. Support ≈ Influence = "I"

Support is the AVERAGE Scenario Score that a group of Participants give a Scenario.

- Note: One key aspect of Ethelo's approach is that support can be analogized to influence. Ethelo looks at the scoring process as a way for participants to distribute their influence across the spectrum of possible outcomes. For this reason, Support is referred to as "I" in the below equations.

b. Approval

Approval is the percentage of group Participants whose score for a given Scenario is positive (greater than zero).

c. Dissonance = DS

Dissonance refers to the variance (in mathematical terms) of the distribution of support for a Scenario. It is referred to as “DS” in the equations. On the platform, it is sometimes called “Conflict.” It can be also expressed as standard deviation, or any of a number of measures of variance in distribution.

Dissonance falls in the range of [0, 1]

If every Participant gives a Scenario the same Scenario Score, then Dissonance = 0. If a group is completely polarized, in which half completely supports a Scenario (Scenario Score =1) and half completely opposes the Scenario (Scenario Score = -1) then Dissonance = 1.

d. “Tipping Point” = t

Research in behavioural economics and social psychology has found that “inequality aversion” will cause group Participants to reject Scenarios where satisfaction is distributed unfairly. Even Participants who benefit from unfairness have been found to show less support for unfair outcomes. Conversely, group decision participants will show more support for Scenarios where satisfaction is distributed fairly. Even Participants who personally dislike an Outcome will show increased support for the Outcome if satisfaction is distributed fairly across the Participants.

Ethelo incorporates this phenomenon in its evaluation of what constitutes a strong decision. Framed in mathematical terms, as DS for a Scenario decreases from 1 to 0, there will be a “tipping point” when people will cease to resist the outcome because of inequality aversion, and begin to support it due to fairness and the unity it creates. Where this neutral tipping point is found will depend on the type of decision process and group dynamics, and can be determined empirically or by mutual agreement.

A priori, we can take “t” as the dissonance of the support distribution in which there are an equal number of participants at each possible level of support, that is, where the distribution graph is completely random. This distribution curve of support will be flat over all possible levels of support. In that case, we can take t = 1/3 which is the integral of the variance over that flat distribution.

e. Unity = U

Unity is a measure of the internal cohesion of a group wrt a Scenario, due to fairness (lack of variance) in the distribution of support for that Scenario.

U can range from negative, when a group is polarized in its feedback (high Dissonance), to positive when a group is unified (low Dissonance). We take the tipping point “t” as the neutral mid-point where a group is neither polarized nor unified; U = 0.

Define U: some function mapping DS onto a range {-1, 1}, where U(1) = -1, U(0) = 1, and U(t) = 0, t is the "tipping point"

We define U as follows:

If DS <= t then U = (t-DS) / t, U falls in [0,1]
If DS >= t then U = (t-DS) / (1-t), U falls in [-1,0]

f. Fairness = F

Unity has a different relevance in different decision contexts. This is because the phenomenon in which a decision becomes stronger through group unity is a social phenomenon; it ceases to have meaning if there is only one participant. For example, in a process where participants do not have relationships or the sense of reciprocity that arises in community, it may not be important that they experience similar levels of support for a Scenario, or feel that influence in shaping the outcomes should be distributed fairly. However, in a stakeholder process where there are entitlements based on a mutually agreed-upon social contract, for example if there is a common resource that is shared, then fairness in the distribution of support for a Scenario can be quite important.

Fairness "F" represents the importance of Unity in a specific decision context, and falls in the range [0,1].

The exact Fairness setting for a decision process can be crowd-sourced by enabling each Participant to identify what they feel is an appropriate level of fairness. This can be done interactively using a graphical voting interface, such as a slider. An advanced interface might allow participants to adjust a distribution curve to find their optimal trade-off between Support and Unity. From that, their preferred level of Fairness can be found.

g. Strength = Ethelo Score = $\in$

In Ethelo theory, "Strength" refers to the collective intentional energy available for execution of a Scenario as a decision. This Ethelo Score is also referred to as a "Consensus Score," where the level of consensus can fall on a spectrum. In a group context, the support of individuals treated in isolation is not sufficient to determine the strength of a group decision, because of the impact of unity or the lack thereof. Conversely, unity alone is not sufficient to determine the strength of a decision, because people can be highly unified in opposition as well as in support.

The Ethelo Score combines the factors of Support, Dissonance, the Tipping Point, Unity, and Fairness into a single function that observes the following Axioms.

Ethelo Axioms

1. If I is constant, $|\in|$ will increase as U increases, and decrease as U decreases
2. If U is constant, $|\in|$ will increase as $|I|$ increases, and decrease as $|I|$ decreases
3. $\in$ must carry the same sign (positive or negative) as I
4. if U = 0 then $\in$ = I,
5. if U > 0 and F > 0 then $|\in| > |I|$

6. if U < 0 and F > 0 then |∈| < |I|
7. if U = -1 and F = 1 then | ∈ | = 0
8. If U = 1 and F = 1 and |I |≠ 0 then | ∈ | = 1
9. If I = 0 then ∈ = 0
10. increasing F increases impact of U on ∈

Taking the above Axioms, we can define the Ethelo Score as follows:

If I > 0 and DS < t, then depending on the value of F, ∈ will fall somewhere in range of [I,1]

We can define ∈ = I + F * U * (1-I)
∈ = I + F * (t-DS) * (1-I) / t

If I > 0 and DS > t, then depending on value of F , ∈ will fall somewhere in range of [0,I]

We can define ∈ = I + F * U * I
∈ = I + F * (t-DS) * I / (1-t)

If I < 0 and DS < t then depending on the strength of F, ∈ will fall somewhere in range of [I,-1]

We can define ∈ = I + F * U * (-1-I)
∈ = I + F * (t-DS) * (-1-I) / t

If I < 0 and DS > t then depending on the strength of F, ∈ will fall somewhere in range of [0,I]

We can define ∈ = I + F * U * I
∈ = I + F * (t-DS) * I / (1-t)

Simplifying the Ethelo Calculation

We can define ∈ generally:

∈ = I + F * (t-DS) * K

Where if I > 0 and DS < t then K = (1-I) / t
Where if I > 0 and DS > t then K = I / (1-t)
Where if I < 0 and DS < t then K = (-1-I) / t
Where if I < 0 and DS > t then K = I / (1-t)

Note: This articulation has been improved on by Piers Lawrence who addressed the second degree discontinuity of Ethelo is his paper : Ethelo function enhancements

IV. Ratification

The final stage of an Ethelo process is formal ratification, which equates to the “voting” stage in most DAO processes. At the end of the aggregation stage, the outcome with the highest Ethelo score is presented again to the participants for a final vote. Depending on the procedural requirements for adoption, this outcome could be approved with a 50%+1 or super-majority. This would be the trigger for smart contract execution.

Roadmap

	Phase 1	**Phase 2**	**Phase 3**
Business	Work with leading DAOs on bespoke implementations of Ethelo, starting with fund allocation	Provide suite of dApps for common decision and governance processes by DAOs Provide blockchain-based budgeting to local governments	Governance SDK, sharealike library of tools, SaaS admin UI P2P funding infrastructure for crypto and grassroots political processes Bridge decentralized decisions to local government and other public engagement processes
Identity	Metask signin	Proof of Humanity Profiles badges/role NFTs with different influents	Zero knowledge control over personal data sharing ; Holochain integration
Decision UI	Seamless onboarding for general public	Gamification; Participants earn Badges, Thelo Delegation and liquid trust Feeds, channels, rooms	Manage communities, conversations, decisions, delegation, advocacy SaaS Self-Serve template library, ideation to Analysis
Crypto Integration	Onramp and offramp Signing decisions, validating votes	Smart contract execution triggers Paying holo fuel/gas fees Thelo token market Allocate staked funds on ratification of decision	Decision NFT registry - decision providence (Holochain, Ethereum) Ethelo engine API, Open source Decentralized hosting (Holochain)
eDemocracy DAO	Create culture, knowledge for curation of democracy processes	Citizen Assemblies - representative samples, sortition, demographic weighting, live deliberation	Funding public democratic decision making eDemocracy Network social platform: Holochain commons

		Extend to public bodies, NGOs, political parties First edition decentralized self governance	Onboard new people to eDemocracy DAO through public digital democracy processes funded by government clients Fund Big Question process to generate democratic mandates

Later:

- Political AI avatars
- Bridge to political parties and election processes
- Full decentralization of governance

Team

Founders

John Richardson

John is a successful social entrepreneur who has established several leading social enterprises. Trained as a mathematician and lawyer, in 2001 he founded Pivot Legal Society. one of Canada's leading human rights organizations. Pivot conducts strategic litigation on behalf of marginalized communities, pushing the envelope on issues of police accountability, sex worker and drug user rights, homelessness and mental health. In 2005 he was named an Ashoka Fellow for that work. He has also been a political organizer and environmental campaigner.

John developed the Ethelo algorithm at university to apply the fairness theory of John Rawls to the challenge of complex multi-party negotiations. For the past 10 years, he has been building and optimizing the Ethelo technology platform

Ben West

Ben is an experienced strategic communications and campaign management professional with a demonstrated history of working in the non-profit sector as well as technology ventures.

Before coming to Ethelo and helping to establish the eDemocracy Network, Ben was communications and public relations manager for Holo and Holochain. Before that, Ben was a high-profile community and climate organizer and led a myriad of advocacy and election campaigns spanning 20 years. He was the National Campaign Director for Stand.Earth (as it is now known) and Executive Director of TankerFree BC, a leading opponent to pipelines. He was also Deputy Leader of the Green Party of BC. He also served as Communications Coordinator for the Tsleil-Waututh Nation for 2 years and led their Sacred Trust Initiative.

Technology

- **Laura Williams:** Laura is the lead developer of the Ethelo platform. A senior software engineer with 15 years experience in crowdsourcing, Laura has built ten different collaboration platforms to engage the wisdom of groups. She has also worked as a senior developer with Chaordix, Mobio and Mogo Money.
- **Kent Mewhort:** Kent is the founding software engineer of Ethelo and an intellectual property lawyer. Kent has worked for large and small software companies including Nokia, Contractual.ly and Coupa in team leadership roles and led the built the first implementation of Ethelo's algorithm and its Ethereum integration.
- **Vatsal Chauhan** is an experienced web app developer who is focused on the front-end of Ethelo.
- **Gabriela Grant** is a senior backend developer whose focus at Ethelo is the configuration panel.
- **Aileen Gatdula** is a junior QA analyst and software tester responsible for platform usability testing.
- **Piers Lawrence** is a mathematician and computer scientist focused on optimizing the C++ Ethelo engine.
- **Elvis Iam** is a Masters student at the University of Waterloo on a grant to optimize the C++ Ethelo engine
- **Alfonso Valdes, Pradip Sakhavala,** and **Rambabu Vasupilli** are devops specialists who assist in the optimization of Ethelo's tech stack

Other Staff

eDemocracy Network

- Tarah Stafford, Co-Executive Director
- Katharina Voss, Communications

Communications, Marketing and Sales

- Andrea De Ascó Cortés, Head of Marketing
- Bradley Roulston, Head of Sales
- Katerina Cookson, Communications
- Jason Farra, Website Development
- Other contractors

Fulfillment

- Ahmed Lelamo
- Saad Sabb

Operations and Finance

- Dan Hathway
- Dale Fan

Appendix 1: Klismos

We are considering the economics of minting a second liquidity token; Klismos.

In every process, a chair is set out for each participant. Klismos are “sponsored” chairs.

Klismos are revenue generating. Owners receive a portion of the Thelo rent from their use. Owners may also receive interest from the staking of underlying assets.

We position Klismos investment as a way of showing support for democracy.

- Way to express support through a capital lockup.
- Status, sponsor, patron, public recognition
- It is a status symbol for owners. They are rare.
- We airdrop special opportunities all the time

They are more than just a fungible asset however. Each Klismos will be unique, and a valuable in its own right for a variety of individual characteristics.

- We commission an art piece for each klismos. Perhaps it gets scratched the more the Klismos is used.
- Each Klismos carries the name of its current and past owners
- Each klismos can carry a record of all the decision processes it was used for, and feedback provided by the participant that used that Klismos
- Klismos will evolve under the direction of their owner.
- We can create a unique AI for each chair, based on the values and preferences of all the decision feedback made using that chair. This is where we could locate the AI avatar we provide to participants later (see eDemocracy and Artificial Intelligence)
- advisor, that uses that wisdom along with insight into the participant using the chair to make recommendations. Or perhaps each participant can help program the chair.. The idea is; they are unique evolving creations.

Minting of Klismos

- New Klismos minted and auctioned as Thelo flow increases
- The rate of minting new Thelo decreases as the flow of Thelo increases. In this way, Klismos dividends always increase over time.

Ifnecessary, we can support value of Thelo by requiring payment in Thelo for Klismos

Appendix 2: The Need to Reform Democracy

Humanity has prospered through its ability to act collectively. However, problems in how we make decisions as groups have created their own increasingly critical challenges, including economic inequality, climate change, political instability, military aggression, and dwindling resources.

These are the great challenges of our times, and they cannot be solved using the same decision making processes that led to them. Concentrations of power, undue influence, factional division, paralysis, lack of accountability and disengaged citizens are only some of the reasons why even democracy has been famously described as the worst system of government, except for all the others.

See Problems of Democracy blog

A Vision for the Future

Society will evolve rapidly over the coming decades. The past century has seen major political movements in every culture, in response to social and environmental change. More popular movements will arise in the face of challenges such as climate change, population growth, economic inequality and armed conflict to name just a few.

Democratic countries' ability to transform the power of popular movements into peaceful transitions and progressive change has many advantages. However, democracies are facing an unprecedented rate of change, as well as competition - and direct attack - from technologically sophisticated authoritarian states. To survive, democratic countries must use technology to secure and deepen the advantages that group participation and collective wisdom can provide.

Democracy's ability to fairly aggregate individual interests into strong social contracts is what has set it apart from previous types of government. However, current models of democracy are based on a 300 year old infrastructure with minimal integration into digital media technologies. While oppressive regimes have responded flexibly to take advantage of these technologies, entrenched models of democracy are showing their limitations and vulnerabilities. At the same time, Democracy's inherently collaborative basis means it has the greatest opportunity to benefit from technology.

The complex challenges of modern society require fundamentally new approaches to governance and group decisions. There is upcoming a new leap in the evolution of group decision making, enabled by Web3 technology. With eDemocracy we will be able to vastly increase the "bit-rate" of public decision-making, integrating real-time feedback loops into our political decision making and implementing inclusive, iterative processes that can generate broad consensus and united efforts for effective execution. eDemocracy will see traditional boundaries between private and public sphere dissolve into a new ubiquity of group decision-making and technology enabled collaboration.

There will be many different technologies that come together in this great economic and political shift; authentication, blockchains, security, access, transparency will all be critical components. But at the heart of matters will be channelling people's collective intentions through governance technology.