Fabriq, A Reputation Management System

Functional **A**bstraction for **B**ehavioral **R**eputation: **IQ** (Intelligence Quotient)

Stanford-MIT Hackathon on Identity, Reputation, Voting, and new Government Systems

Team

Connor Keenan
Ashley Taylor
Toni Oloko
Patrick Deegan
Carolyn Reckhow

Table of Contents

Intention:

To design a scalable and interoperable reputation system that will help to mitigate the tragedy of the commons and provide a foundation for liquid democratic communities.

The blockchain enables accountability within social groups that can set the foundation for new political and economic systems that were not previously possible. This white paper demonstrates that a flexible framework for measuring and verifying reputation, (i.e., social capital) of a persona and group persona, is crucial for the functioning of these systems. They are self-organized and maintained, and contribution from members is foundational in order for them to thrive and perhaps even exist. Members are incentivized to contribute because they earn reputation in the form of tokens.

Scalable Reputation System

This reputation system can first be implemented in specific use cases, but is flexible enough to be modified and used on a larger scale. Using the same framework across communities will allow for an interoperable constellation of identity that individuals and groups maintain and control. Our notion of identity grants Personas to both individuals and groups and is inspired by the work in Holonic Systems design. A holon is an entity that is simultaneously a whole and a part in the context of open, self-organizing structures.

Reputation is more efficiently measured and interpreted if we develop a standardized framework in which the badges and roles can be understood between the different communities. Reputation scores recognized in different contexts can be assigned weights accordingly so they can be interpreted appropriately. Badges, based on reputation within the network and through external systems, can be used for a delegate voting procedure. The interoperability forms the foundation of liquid democratic systems that are designed for scale, providing onboards for rapid community organizing.

Our first implementation of this framework will be event-based, focused on a real-world community, that has a desire for operating on principles of shared ownership and liquid democratic decision making.

As a viral system, reputation can be used for individuals and groups to assert their identity, and often leverage their purchasing power in advantageous contexts. For example, a NYC cycling enthusiasts club can demonstrate that they have more membership activity than any other cycling club, and leverage a discount for their members for biking gear, because the shop wants to reward influencers. On a larger scale, a community with a large and influential

membership can negotiate with legacy political bodies. Individuals could also use this to their advantage in multitude of contexts.

Use Cases

For the purposes of this white paper and presentation, we can imagine a social gathering, or party, in which an initial group of organizers want to set up a structure where reputation can be distributed according to tiers of a crowd curation. An initial group of 20 people are given permission to invite X people, and each tier that is invited outside of that initial group can be imagined in a series of nested circles. Each group that is farther from the center has less of an initial reputation score and also less guest invite codes. After the initial issuance, the members are open to increasing and decreasing their reputation through different ways. Members can beam reputation to other members, and burn reputation from others. They can also earn reputation for fulfilling roles within the party or community setting, such as volunteering as a security guard, or allocating their loft space for a venue. These reputation points represent different tiers of voting rights, and can also be used for obtaining benefits from future events such as more invite tokens, free drinks, or exchanging for any item that is redeemable or discounted based on a threshold of reputation that you hold.

The party is also a starting point for experimenting with new reputation management systems that will evolve to become more complex and nuanced as use cases grow. In order to build a flexible and agile technology platform to support these use cases, starting with a physical social network that can serve as a playground for these technologies is beneficial. It introduces new people, who are creative and visionary, to this realm, who may have not otherwise encountered the material. It also reduces the learning curve by providing a physical place where the blockchain world is experienced inherently just by attending the party and participating in the group's social network. People are more likely to get interested in the emerging crypto-space after a positive social interaction because they want to continue and increase the bonds that are beginning to form. Additionally a reputation system solves the scammer and hoarder ticketing problem at events like Burning Man.

Imagine if a city was to open up its public spaces, such as museums, parks, and other buildings, that could be rented out for use by any community group or individual during its non-public hours. In the current world, the city is not incentivized to open up their doors because there is no reputation system that governs whether people will actually use public space in a way that is appropriate and beneficial for the whole. If it were open to everyone, it would be subject to the tragedy of the commons, and there would be no way to ensure that certain groups did not abuse the space by not cleaning up, damaging it, etc. We could implement a reputation system, though, that could allow for the city to recognize that a group would use the space in the appropriate manner. Eventually the city would no longer have to manage these spaces; instead the reputation system could take over in terms of allowing

groups to bid to use the space, and ensuring that they will be taken care of, if that group wants to be able to access another space in the future.

Another classic application of this reputation system is a water reservoir that farmers access for their fields. Those farmers as a collective, though, make a group within a larger community of which they are part, such as a town. Even if the farmers amongst themselves are managing their resource fairly according to all the farmers, the community can burn the reputation of that group if they are not managing the resource effectively and harming the water supply for the larger community.

Technology Frameworks:

Several technologies and systems are assumed as their designs should be familiar to researchers in the blockchain space and thus their detailed specification are out of scope of this white paper. In order to implement Fabriq, we expect these these systems to be available or otherwise off-the-shelf:

- Decentralized Public Social Identities (Personas/Profiles with Attributes, e.g., onename.io name resolution and key-value store services)
    - Public keys in Persona allow other uses to send reputation and invites to other users, transactions sent to these addresses will allow Smart Contracts to determine the origin and forward the parameterized transactions to the appropriate Group Smart Contracts for actual processing
- User controlled (authenticated) Private Key and Token Wallet (e.g. hardware wallet running on user's smartphone)
    - Wallet can make a private peer-2-peer messaging network with DApp so that DApp can send authentication challenges and signing requests (transaction requests to the user's wallet)
    - Process for pairing wallet with browser sessions (e.g., QR code displayed by DApp allowing phone to discover DApp and initialize encrypted messaging session, e.g., a network such as telehash)
- Hosted Ethereum DApp UX (e.g., ipfs hosted Javascript that can view public keys in user's wallet to link the user's browser session with their Personas' resources) running in a user's browser
- Ethereum or equivalent Smart Contract framework
    - User Registry Smart Contract for initializing accounts and distributing public and private keys to user wallets

Blockchain Backend: Ethereum

Ethereum is a cryptographically secure peer-2-peer global virtual computer in which applications run on a decentralized network. Every state change in computer programs is processed according to the consensus algorithm of the network, so that all users must agree on each transaction.

Ethereum or similar blockchain technologies are the missing link as to why these types of reputation management and liquid democratic systems have not yet emerged. There has not previously been a way to bind people together in ways that supersede the effectiveness and resilience of legacy world models. In short, the 'cost' of experimenting with and implementing reputations systems was too high for the average user. We envision a new stack of technologies that is easily extensible and provides a basis for trust that is reusable and operates at internet scale.

On ethereum, it is relatively trivial to implement token issuance contracts and bootstrap voting procedures. Our group leverages the potential of those technologies to provide a flexible framework where non-tech savvy individuals can make use of an easy to implement democratic community structures.

Fabriq Definitions:

Reputation - a measurement of a persona, identity, or group of persona's based on a defined and possibly dynamic set of metrics. We will also refer to reputation as **social capital.** That is, a crypto token with associated metadata (e.g. for tagging with information to establish group anchored meaning) and a numeric value.

Persona - the linked digital representation that is a collection of attributes and tokens under control of a person (i.e., associated with a persistent identifier and credentials to which a persona can authenticate against) in a certain context, such as a party.

Identity - constellation of personas (e.g., social, legal, business, etc.) based around a real world person.

Badge - representation of a persona's expertise in a given area, based on experience or external data sources (existing profession, Reddit contribution, etc). Badges are foundational for delegate voting procedures.

Burn - take away reputation points, by burning some of one's own reputation points. Different tiers can burn more based on a predefined metric.

Beam - Send reputation between personas. The ratio can vary from 1-1 depending on the sender and recipient's tier

Tragedy of the (Failure of the) Commons – A community can manage a shared resource (i.e., avoid depletion) without suffering the free rider problem (over-exploitation of commons). For example, there is a water reservoir for a decentralized network of farmers. Based off of rainfall, only a certain amount can be taken from the reservoir. People can takes much as they want, but they will be penalized for taking more. Those penalties should be just or fair; for example, roughly commensurate with the pain the others feel. It is a graduated penalty system that would instantiate based on pain. There are various proposed solutions to the Commons evident in the literature. This group specifically takes inspiration from the solutions proposed by Elinor Ostrom and expects that Fabriq can lead to further refinement of those principles through experimentation in the real-world.

Reputation Overview

Reputation is required to vote or evolve the group. There are many applications for this reputation component, such as:

- Shared ownership, in the form of crypto equity. For example, if a community has a common fund, a reputation score in proportion to all other member represents the proportional control over that fund.
- Delegate Voting Procedures
- A resume based on reputation in different areas. For example, one has a reputation score with relation to childcare that makes her a trusted babysitter, but a low to none score in terms of food preparation, so she is not likely to be hired as a cook. Badges can be used to allocate these reputation scores.

Reputation scores can also be negotiated for leverage in certain situations. For example, the group of farmers can negotiate a loan for expanding the infrastructure of their water supply by proving that the community has sanctioned them as acting fairly and reasonably in their management of the reservoir thus far.

Membership and Reputation Issuance

We envision a publicly accessible web-based user interface that allows new groups to be defined and created using a simple webform.

Tokens are issued for members of a community governing a shared commons resource initially. Those tokens can initially be allocated to a group that knows each other, in which case the tokens represent membership. There could be initial tiers, such as 10 people come together to organize a social gathering. Those 10 people in Tier 1 can invite 20 people each. Those 20 people in Tier 2 can invite 5 people each, and so on. There can be as many tiers

and invitees as the community wants. Corresponding initial reputation scores are associated with those tiers.

There is a certain amount of guest reputation tokens available, and they are issued at certain points over time, dependent upon the community. For example, for a party, there can be X number of guest tokens issued for each new event. Based on your reputation tier, you can have access to more guest tokens: Tier 1 = X tokens, Tier 2 = X/2 tokens, and so forth. People may want to gain more reputation so that they have more invite tokens, which is an incentive for growing the party.

There is a procedure for voting in new members in order for new tokens to be issued. For example, in the case of a social gathering, if a persona attends 5 guest events, then they become eligible to apply for a membership token. A group, such as those with a Member badge, can be responsible for voting them in, or it can be submitted to the entire group. A user can also link their real world personas and external reputation system (see discussion in badges) as additional attributes on their Personas.

Example of an Ethereum contract for token distribution

Initialization

First caller to the contract passes array of 32 byte pairs representing [(reputation, invites)], with each pair corresponding to its own reputation tier. For example passing the data [20000, 5, 1000, 10, 100, 20, 20], will grant the creator 1000 reputation and 5 invites. The 5 people invited by the creator will receive 100 reputation and 10 invites, and so on.

Methods

Beam <recipient> <amount>

Deducts <amount> of reputation from senders address and adds it to recipient's address

Invite <invitee>

Deducts an invite from the sender's account. Adds the invitee to the next tier

```
{
    (def '_owner 0)
    (def '_total_rep 1)

    (def '_addr_space (exp 2 160))

    (def '_reputation (addr) addr)
    (def '_tier (addr) (+ _addr_space (addr)))
    (def '_invites (addr) (+ (* _addr_space 2) (addr)))

    (def '_tier_invites (tier) @@(* tier 2))
    (def '_tier_reputation (tier) @@(+ (* tier 2) 1))

    (def 'cmd (calldataload 0))

    (return 0 (lll {
        (when !@@_owner {
```

```
      [[_owner]] (caller)
      (for [0x0]:1 (< (* @0x0 32) (calldatasize)) [0x0] (+ @0x0 2) {
           [[(_tier_reputation (+ (/ @0x0 2) 1))]] (calldataload (* @0x0 32))
           [[(_tier_invites (+ (/ @0x0 2) 1))]] (calldataload (* (+ @0x0 1) 32))
      })

      [[(_tier (caller))]] 1
      [0x0] (calldataload 0)
      [[(_reputation (caller))]] @0x0
      [[_total_rep]] @0x0

      (return @0x0)
      })

    (when (= cmd "invite") {
      [0x0] @@(_invites (origin))
      [0x20] (calldataload 32)          ;; Who is receiving the invite
      [0x40] @@(_tier (origin))         ;; Sender's tier
      [0x60] @@(_tier @0x20)            ;; Recipient's tier

      ;; User can't exceed their tier's allowed of invites
      (when (=> @@(_tier_invites @0x40) @0x0) (stop))

      ;; Can't send invite to already invited user
      (when (@0x60) (stop))

      [[_invites]] (+ @0x0 1)                     ;; Increment origin's invite count
      [0x60] (+ @0x40 1)                          ;; Increment tier for recipient

      [0x80] @@(_tier_reputation @0x60)
      [[@0x20]] @0x80                             ;; Invitee start's w the tier's reputation
      [[(_tier @0x20)]] @0x60                     ;; Save the tier # to the invitee
      [[_total_rep]] (+ @@_total_rep @0x80)       ;; Keep track of the total reputation

      })

    ;; Send reputation to another member
    (when (= cmd "beam") {
      [0x0] (calldataload 32)             ;; Recipient
      [0x20] (calldataload 64)            ;; Amount
      [0x40] @@(origin)                   ;; Sender balance

      (when !@@@0x0 (stop))               ;; Recipient must be member (has reputation)
      (when (< @0x40 @0x20) (stop))       ;; Sender must have the reputation to send

      [[@0x0]] (+ @@@0x0 @0x20)
      [[(origin)]] (- @0x40 @0x20)
      (return 1)
      })

    ;; Method to load arbitrary data
    (when (= cmd "load") {
      [0x0] (calldataload 32)
      (return @@@0x0)
      })
  } 0))
}
```

Common Reputation Pool

When reputation is burned, it is sent to a commons pool. That commons pool is governed by all members of the community. In our initial case, that reputation pool can be used as the pool for future issuance of guest and eventually new member tokens. The future Fabriq framework will allow communities more choices over how to govern the re-distribution of the pool. For example, the community can decide that the those in the badge group **'Coordinators'** are most responsible for determining how that pool is re-allocated in most cases.

Reputation Exchange

Metrics are a key component of reputation. Goal oriented individuals can accumulate reputation based on their contributions, and how their peers verify or discredit that contribution.

Reputation is constantly re-negotiated in practice. A percentage of every person's reputation is allocated for exchange and giving credibility and discrediting others reputation. Members place a bond of your reputation on the line, and they can beam some reputation to another person to validate their skills in a certain area. They burn some of their own reputation if they want to take away reputation from another person if she is not fulfilling her duties, or if she is acting in a way deemed harmful by another member.

Reputation can vary from 1-1 dependent upon an individual's ranking or badge, and based upon the community's rules. People with higher reputation have a surplus that they can add and subtract from other users, and vice versa. For example, in the case of the party, the initial organizers will have more of a weight when beaming or burning reputation to others, at least as long as they retain the reputation associated with that initial tier.

Each implementation of this reputation management system will have different metrics. For example, at a party, there will be a board generated for every event in which certain roles need to be fulfilled. If a person decides to fulfill that role, they place a certain amount of their reputation on the line. They can earn that reputation back or lose it based on how other members deem they are fulfilling that role. For example, a security guard is goofing off, so someone burns their reputation. If a Tier 1 burns their reputation, they lose more than if a Tier 4 burns them.

Reputation Management on Ethereum

A contract checks to see if this person has the appropriate amount of reputation to be able to vote in this particular instantiation.

A contract checks to see if this person is in the appropriate role group because this vote is restricted to members with the badge of that role.

Voting Procedures

Voting rights can be determined according to a persona's reputation in that community. Badges are used to determine if a persona has the ability to vote on a particular initiative. Within the badges, there are different weights based on an persona's ranking within that badge. This is constantly negotiated based on shifting reputation scores. Reputation is sorted in an order statistic tree for O(log(n)) percentile lookup.[1]

Types of Badges

- Experience
    - Events you have been involved in, your contributions, roles that you have fulfilled
        - For example, you volunteer your services to oversee the implementation of the new infrastructure for the reservoir. You place a bond of your reputation on the line. Other people verify that you fulfilled this duty correctly, or if you are not, they burn their reputation to burn some of yours.
        - If you fall below a certain reputation threshold, you are no longer eligible to participate in the group. You can be placed in a blacklist, and must fulfill a certain number of tasks and gain reputation to rejoin the group. Your participation while you are not above the threshold is scored with a rating of half of what it would be if you were in the group.
- Expert
    - Professional Experience. Your peers can verify that you have fulfilled this role in your professional life by sending you reputation.
- Civic
    - Fulfilled voting duties, volunteer duties, participate in city events. Your fulfillment of these roles corresponds with an increase in civic reputation.
- Sample Structure:
    - Badges for any specific community are decided upon initially by the first organizers;

[1] http://en.wikipedia.org/wiki/Order_statistic_tree

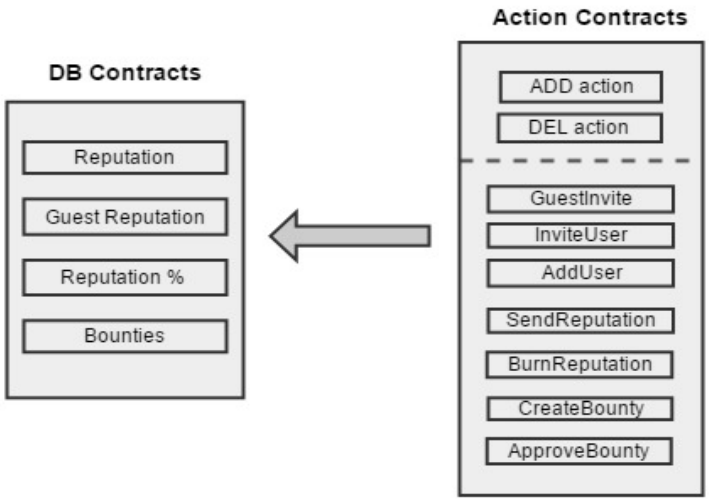
- Anyone can submit a new badge that should be added, and X of the entire group must approve that submission, or X of a certain role (e.g. the curators) must approve that submission
- Top tier members can create a badge, and make it configurable. For example, it's dependent upon being in a group for X amount of time, and based on being above a certain percentage in a category that you select yourself being part of.

Delegate Voting using Badges

Certain votes will be domain specific and restricted to voters who have the appropriate badge. For example, in a public space context, perhaps there is a vote around if the group should negotiate a liquor license with a space that they frequently use for events. For this kind of vote, only those within the Coordination or Concessions badges were able to make a vote. **Coordination** badges refer to those who are skilled at organizing, logistics, and infrastructural components of an event. **Concessions** badges refer to members who are skilled at organizing and bringing food and beverages for events. If you do not have one of these badges, you can delegate your vote to someone with a badge. You can easily choose, if you are not already knowledgeable, by observing a ranking of the people with these badge groups.

Community Upgrading and Management

To facilitate a variety of permissions and voting mechanisms, we can leverage an existing DAO contract management and upgrade design pattern called DOUG. Introduced by Dennis McKinnon last year, DOUG has since been adopted by Eris Industries. It utilizes a registry to track contracts by name for easy upgrades or expansions and uses two types of contracts for access control: DBs and Actions. DB contracts contain minimal logic, simply read or write to blockchain, have read methods publicly exposed and write methods that must be accessed by a valid action. Actions are a contract type that contain the logic for accessing DBs. Including an action for adding new actions and one for removing actions enables upgrades and additions to existing permissions and data stores. The DOUG design pattern establishes modular, dynamic configuration capabilities for community DAOs.



DB contracts

- Reputation
    - Contains bootstrapping code for initial distribution
    - Private methods (only callable by valid actions)
        - AddReputation
        - RemoveReputation
        - Invite
- Guest Reputation
    - Private methods
        - Invite
- ReputationPercentile
    - Public accessors
        - GetRank(value)
        - GetPercentile(value)
    - Private methods
        - Add, Remove
- Badges
    - linked list of badge contracts that contain one method, isValidUser()
- Bounties
    - Escrow of reputation between users

- Action Contracts
    - AddUser
    - BurnReputation
    - SendReputation
    - InviteUser

- GuestInvite
- CreateBounty
- ApproveBounty

Hybrid Democracy Models

Someone or a group with a high reputation score can still be overthrown. A sheer number situation, in which some percentage of the total number, regardless of the weighted reputation, can decide to redistribute reputation amongst the community. The threshold to overthrow is dynamic, and we guarantee that the collective could always scale their votes so that X% was needed to overthrow the existing actors in control.

Real World Badges based on Existing Social Networks

In order to onboard members onto a new reputation system, real-world personas will want to utilize their existing social reputations in many cases. They can use existing data about themselves, but re-interpreted in novel ways, to generate a score that can then be used to apply for or verify themselves in certain contexts.

For example, we could build a contract that mines a users' Reddit data and gives them a ranking in certain areas, such as how relatively constructive the users' comments were. That can issue a badge in that field that is pending based on confirmation by the group to which they are applying. The contract associated with that pending badge will only be validated if certain criteria is satisfied, such as that reputation is confirmed by other members beaming them reputation. The user broadcasts their mined score out to their social network, either an existing one or for the new one in which they are applying. The broadcast asks for feedback by verifying or to refuting the reputation score. They place a bond to credit or discredit that score. Your reddit score could be used to assert your ability to act as a group moderator or a community manager, and countless other situations.

8 Principles for Managing a Commons, and Smart Contracts that Enable Them[2]

1. Define clear group boundaries.

Smart Contracts:

- Check that user has a threshold for participation.
    - ID verification service, or reputation
- Reputation score,
    - based on your real world identity, and if your peers agree that you should be part of this group.
    - based on your contributions.
- Tiered reputation scores that are based on a percentage to the whole within that tier. This is constantly negotiated based on shifting reputation scores. Reputation is sorted in an order statistic tree for O(log(n)) percentile lookup.
- Each tier also has its own ranking amongst the other tiers
- Through the delegation of a membership board, users with earned guest reputation can be voted into to a permanent membership tier.

2. Match rules governing use of common goods to local needs and conditions.

Smart Contracts:

- When reputation is burned, those funds go to a collectively owned community pool.
    - community pooled reputation can be used toward guest tier reputation.

3. Ensure that those affected by the rules can participate in modifying the rules.

Smart Contracts:

- Weighted voting process according to tiers and badges.

[2] Elinor Ostrom's 8 Principles for How to Manage the Commons:
http://www.onthecommons.org/magazine/elinor-ostroms-8-principles-managing-commmons

4. Make sure the rule-making rights of community members are respected by outside authorities.

Smart Contracts:

- Provide an externally facing reputation score, and make insights public.
    - The external authorities will most likely view particular checkpoints within the process.
- Using the blockchain, one creates a ledger of the participation of the communities' members that is incorruptible. That makes it respected by outside authorities.

5. Develop a system, carried out by community members, for monitoring members' behavior.

Smart Contracts:

- Contribution system.
    - Users can give and/or burn reputation that verifies or discredits other users.
        - The givable and burnable reputation is derived as a fixed percentage of a user's overall reputation.
- When a user is doing an activity they can put up bonds.
    - They are placing their reputation on the line for other members to validate that they have participated.

6. Use graduated sanctions for rule violators.

Smart Contracts:

- Reputation is burned according to the strength of the violation.
- There are tiers of violations, and associated levels of burning possible in accordance with them.
- Systems are built into the rule modification process so that members can decide upon the boundaries of the violation tiers.
- Logic is in place where the most severe sanction of rule violation results in burnt reputation to the point of expulsion.

7. Provide accessible, low-cost means for dispute resolution.

In disputed situations “accessible low costs” means that the issues are clearly defined and processes are transparent.

Smart Contracts:

- Process for raising issues/defining conflicts and raising various solutions
- Nature of the user’s reputation determines priority in which issues are raised for voting and resolution.
    - Those with “civics” badges (have greater reputation in participation) would weigh heavier in priority
- Users whose reputations in relevant badge areas (i.e. expertise in mediation) will posses votes which weigh heavier in conflict resolution.

8. Build responsibility for governing the common resource in nested tiers from the lowest level up to the entire interconnected system. *(Politics by process, not prescription)*

Smart Contracts:

- The reputation system translates from a small, specific group, such as reputation amongst the farmers, to a larger group which represents the larger community to which the farmers belong.
- Nested tiers start in the lower levels and work up to the entire system
    - The shared resources in one community is part of a larger group (holonic paradigm)
        - For example-- some are farmers responsible for managing a water resource, but if the farmers themselves as a total violate a rule of the city, the farmers as a group are penalized.
- Original users (the first 5) consist of a tier, rippling outwards throughout the entire interconnected system
    - Each of the original 5 has 20
    - Each of those twenty gets 2, etc.

Design Goal: Politics by Process, not Prescription

In order to create value and avoid the tragedy of the commons, a reputation based system within a community must incentivize authentic and earnest contributions towards a common goal. In this spirit, our intentional design is based on the principle that the rules themselves should be evolvable. It's fundamental that there will be accessible low costs to participation. This means disputed situations, systems for voting, structure change, and decision making are clearly defined and transparent processes.

Fabriq will set the initial parameters for a social form that evolves over time towards an optimal structure for building strong social ties and facilitating collaboration among small groups united by a common purpose.

Badges and membership tiers provide the structure for the emergence of holonics in practice. Small groups form nested tiers from lower levels up to the entire system, and thus shared resources in one community are part of a larger group in a holonic framework.

The blockchain allows for levels of social accountability not otherwise possible. In this iteration, Fabriq sets a foundation for a liquid democracy within an intentional community membership allocation and badge system.

Conclusion

This white paper clearly outlines the details necessary for implementation of this MVP and the necessary guidelines for the next iterations.

In order for global governance systems to emerge, that are possible with blockchain empowered communities, we have identified a clear mechanism as a Minimum Viable Product (MVP) that has scalability as an integral design requirement. There are applicable real world use cases to establish a potential for viral effect. We expect that templates for membership-only and collectively owned communities, with flexible and agile governmental structure, and ability to assign and provide reputation bounties for roles, could establish a network effect. The standardization of reputation across different communities would allow for personas of individuals and groups to leverage and negotiate their political and economic power. With network effect, the substrate of this reputation system establishes a necessary foundation.

Our product involves the design of a low-friction and scalable (with respect to onboarding and sustainable use) global reputation system. It encompasses a well-scoped technology stack that is extensible, open, transparent, and compatible with privacy by design principles. We envision our contribution as a Minimal Viable Product to further the development of community and group governance and incentivization mechanisms (e.g., applied game theory) for ensuring convergence to accurate reputation scores.