Aquarius Whitepaper

Proposal v. 0.0.1

The AQUARIUS =~ APP — *Open community design and governance software for physical communities and humans*

Vitalik Buterin and Gavin Wood, et al. development of Ethereum created the framework for storing transactional, in this case programmatic "state," on the blockchain. Working within that framework in a "layer 2" capacity using Plasma on Ethereum, we are here creating a prototype for a light, flexible "community building" tool, which is a to say a software that stores sets of agreements between human actors (contracts), and "token" (working currency) balances as applied to said contracts and communities. We call this platform "Aquarius," and we call the act of using the software and building communities with it, broadly, "lifestyle design." Aquarius intends to be to governance what Ethereum (or Bitcoin) is to finance.

Aquarius intends to be fully human operable and human readable to the end user. The end user should be able not only to create complex systems using a simple interface, but should be able to read and understand them at any time in their existence. To this end, the Vyper programming language was used because of it's strictness and emphasis on human readability. We, like Steve Jobs intend to make blockchain and the entire act of governance, or civics "as easy to use as a toaster." Or, "so easy, even a child could do it."

A Software Managing Human Actors and Relationships

If a DAO is a Decentralized Autonomous Organization that exists "somewhere" in the cloud, with human (and perhaps non-human) actors holding strings as if all tied to a giant floating hot air balloon, then an Aquarius Community is human actors all holding strings attached to each other. Far greater in scope than a mere social network with digital simulacrums (avatars) interacting with one another, Aquarius is a management protocol for very real human actors interacting with each other and a contract management platform for multi-party legal contracts ("communities") and jointly owned or communal property ("commons"), and governance ("institutions"). Thus described as "lifestyle design," "Aquarius communities," or "lifestyle design communities," generally.

A Consensus Mechanism running within the "hardware" of legacy government systems

If Plasma is a "Layer 2" protocol running on top of Ethereum, then Aquarius is a

layer 2 protocol running within whatever legal zone a user finds themselves in. Within all the possible legal ways of human organization within a given country ("legal zone"), Aquarius allows the creation of optimized human interaction ("lifestyle") within an open-ended framework.

Simplified User Interface and Gamification

What if creating a government was as easy as creating website? What if it was as easy as creating a website with an automated website platform without any technical or legal knowledge? Such is the aim of the Aquarius software. Computers over the past thirty years have miniaturized and expanded in capacity and capability by orders of magnitude unfathomable by their original creators. Lets look at the progress of world governments during that same period--you don't have to look too long--it's a stagnant pool. In fact, it's a vapid cesspool, festering with corruption. The locus of control of democracy in the modern context is far too macro, and as I demonstrate in another article, falls prey to certain constraints in game theory.

A Tool So Simple, Even a Child Could Use It

Steve Jobs, with the creation of the Mac, simplified the skill of working with a computer by orders of magnitude by introducing a graphical user interface (GUI). With it, he enabled the non-technical lay-person to take full advantage of a computer's capabilities with vey little technical knowledge, even none. Similarly, a modern person, almost anywhere on the globe, cannot hope to effect much change in their government, without money, powerful connections and complex knowledge of the law - things frustrating out of reach for 99% humanity. Sure, a person can vote, and depending where you live, these may or may not be fair or accurate, but even then, the locus of control is far to broad, with too many issues within the purview of a single fallible human candidate. Modern democracies as a whole are characterized by a state of petty bickering an constant gridlock, while scarcely an intellectually sound bill or proposal surviving intact. It's like trying to build a microprocessor by poking around in the mud with a stick. Sure, silicon is an extract of dirt and the constituent components are present in the mud, but... you get the idea. It can NEVER be done with the current coarse instrument of democracy. It is stuck in version 0.1 and it horribly inefficient.

Enter lifestyle design. With the Aquarius app, the actual control over one's community is simplified and furthermore "gamified" to the extent that one can achieve a certain enjoyment from the exercise of civics. Hopefully, if the development of the app is a success, it can be as fun as the best of modern video games, and it can be fulfilling, it can be sustainable, it can be green, and it can reduce waste as well.

Social media applications are good at addicting us because they give us a relatively high value psychological reward (attention and recognition, in various forms), for a very low input cost (pushing a few buttons). Yet the current interface of social media and democracy is worse than flawed, it's horrendously divisive and ineffective. It's main outcome is anger and polarization, rather than effective action. In fact it promotes inaction, by providing a simulacrum--a spurious substitute for action--giving a person a "feeling" of having done something, when in fact they have accomplished nothing at all.

Arguing about democracy on social media is about as effective as preparing to run a marathon by watching one on TV. You're no closer to the goal then when you started.

Monarchy -> Democracy -> Lifestyle Design
Communism -> Capitalism -> Lifestyle Design

The inevitable march of human reason. Lifestyle Design replace parts of legacy government and legacy economics simultaneously by combining the two into one. But unlike previous fail social experiments like fascism or communism, you don't have replace the current "hardware" or your countries government to run it. You don't have to kill anyone (and you definitely should not!), you don't have get a single politician's vote, and as long as it's legal to form a corporation where you live, it's legal to do lifestyle design, which at it's legal root is just a corporation, with community members being it's officers, board members, and shareholders. Membership in an Aquarius community is no different than joining your local Lion's club, condo community or the Girl Scouts. You even enjoy legal protection (contract enforcement) from your "Layer 1" government in most cases.

Easy, easy, easy -- it has to be easy

In order to "load" itself and run, Communism had to displace or kill the current government or owners and seize the means of production, which needless to say, in addition to being catastrophic in terms of lost human life, is terribly difficult to pull off. Lifestyle design on the other hand can be done when any two or more people are in agreement or have a shared belief. If democracy is a shovel, lifestyle design is a excavator, electron microscope, and refinery in one. Setup correctly, lifestyle design is easier than working a legacy job, and certainly easier that trying to change your government, while providing many of the same benefits and meeting many of the same needs as those institutions.

Simplifying Human Life by Obeying Best Practices from Biology and Game Theory

Think of Aquarius like a massively multiplayer game where the goal or prize is a better lifestyle, and where the decisions made "in-app" create very real contracts and results in real life. By "joining" or "creating" a community, you agree to abide by the rules set forth in it's charter or constitution (contract), for as long as you are a member. You can leave at will and you can join or be kicked out under whichever rules are set forth in the charter. By being setup in an open-ended "builder kit" kind of way, we predict that people will use it in ways that we did not initially foresee and may get results we never thought possible. Rather than being a single "best governance" practice, it is a way by which many different style of governance may be tried, which could be shared to the Aquarius Ecosystem Wiki, and which could then be learned from and even enhanced with AI. But we shall endeavor here to give some basics and best practices as a rough guide.

The Basics

Aquarius is an end user app that generates predicate contracts on Plasma Prime. These predicate contracts are referred to as "communities" within the app. A user "signs in" to the app using an ETH ADDRESS which links the various type of tokens or contracts they may create to themselves, or assigns them to a multi-sig smart plasma contract. This single address or multi-sig smart contract is/are referred to as "founder(s)" of a community.

The user is then able to create and name an arbitrary token, "name_of_communities_cash," based on rules within the generalized plasma framework.

Users may then be admitted or excluded according to rules set when the community was created (since communities and groups of founders, generally, are of small fixed size (< 3000), then single, n of m user, or all user signing, as discussed in the generalized plasma document, should work for the initial use case. In larger group sizes, new methods of signing may be needed.

The information created subsequently is all stored as 'state' onto the Ethereum blockchain, with no direct fungibility between the tokens created in a given community and Ethereum itself, with the 'state' as a whole being modifiable only by the signatory members according to the rules set at the time of creation.

- *Votes* modify *state* on the Ethereum mainchain

- *Backups* also modify state on the Ethereum mainchain

- Accumulations, too, modify state on the Ethereum mainchain

- *Charter* (or Constitution) is the colloquial human language reference to original

Plasma smart contract start state and sets the parameters by which a smart contract can be modified.

- Votes commit state when members of a community modify the plasma smart contract which underpins their community as a whole.

- Backups commit state at a certain interval of a timestamp.

- Accumulations commit state when the number of tokens that have changed hands reaches v (a fixed variable).

Votes

Votes can be setup any number of ways at the time of community creation (which is to say Plasma Smart Contract creation). Permissions are linked via owner to the Ethereum account(s) holding them either at the time of creation, or via Plasma Smart Contracts created within the community later.

Inside of Aquarius (which is to say, inside of the sidechain), five types of states are stored, which are linked to a respective (owner) Ethereum outside account, these are:

1. Memberships (these are memberships in one or multiple communities)
2. Permissions (these are rights to modify state within a community that modify the Institutions (a type of struct addressed later) created by that state)
3. Tokens held (these are units of arbitrary community currency)
4. Votes (these are fundamentally transactional modifications to the underlying contract, handled the same as votes normally in the Ethereum ecosystem)
5. Institutions (these are smart contracts that create other sets of memberships (owners/share holders), permissions (voting rights), and tokens (shares) within themselves)
6. Banks (these are institutions that can create tokens or shares of institutions arbitrarily)
7. And transactions (as in the case of normal currency exchange)

The Aquarius App itself is a kind of wallet/interface that holds a persons memberships as well as let's them access all the other functions of an Aquarius community.

Memberships

Memberships are themselves smart contracts that contain permissions to access community votes, ownership shares and voting rights in community institutions and within communities as a whole. A membership, as the name implies, is a set of access privileges and rights with regards to a certain institution or group of

institutions.

Permissions

Permissions are the listed groups of voting privileges or ownership shares themselves, stored within Memberships.

Tokens

Tokens are the unit of arbitrary currency created within communities. They can have any name.

—-

To understand lifestyle design and it's principles more clearly, one may read the full book here.

Aquarius Quickstart Guide

"A designer is an emerging synthesis of artist, inventor, mechanic, objective economist and evolutionary strategist." - *Buckminster Fuller*

How to Use the Aquarius App

When you first open the Aquarius app, you will be asked to generate a member token. This will identify you as a member of one or many of the communities you may create or join later.

Then, you will be asked what you want to do:

>> Start my own community

>> Join existing community

>> Advanced crowdfunding community model (still in development)

Let’s say you selected “Start my own community.”

This community is secret >> shared.

Move the slider to set your community as either secret or shared. This

determines whether other users can see your community in the search function of the Aquarius app. You can modify this later.

Next, give your community a name and enter the text of its founding charter. The text of the founding charter could be like a constitution of sorts or it could be a simple shared purpose, forming a temporary community for a given task, for example.

Then, answer the question “Who founds this community?”

Answer by entering the member token public key numbers of the founding members. A ping will be sent to their user accounts asking if they accept their roles as founding members of the community in question. Once a yes response is received from each user, you may proceed to the next step. If a *no* response is received from one or more users, the app will prompt you if you want to proceed without those users before continuing.

Set the rules by which the founding charter and name may be changed, such as:

a. By a unanimous vote of the founders only (strict consensus)

b. By a unanimous vote of the founders plus all members (strict consensus)

c. By a 2/3 majority vote of the founders (super majority)

d. By a 2/3 majority vote of the founder plus the members (super majority)

e. By a simple majority vote of all members

d. By a weighted share ownership vote (at 1 vote per share of ownership of the community’s common properties and institutions)

e. and so on...

(These values from the dropdown are pulled from the Aquarius Public Ecosystem Wiki.)

Next, set the rules by which a person may join or leave the community and the circumstances under which a person may be forced out (forced sale of shares).

Note: The word *rules* is used generally here, but there are, in actuality, two kinds of rules in use: *hard rules*, which become part of the code of the community

inside the app that governs how it algorithmically functions and how members may interact with it, and *soft rules*, which are verbal or written agreements between humans, subject to community or legal interpretation (non-algorithmic), which are merely recorded for reference within the app.

Next, mint your community's currency by giving it a name and by setting a hard or flexible ceiling on the amount that can ever be created.

a. Hard limit (gold standard)

b. Flexible limit; bank can create more (quantitative easing)

This currency will be created, along with the rules of the community, and the ledger of the community's votes and ownership, etc. on the Ethereum blockchain.

Next, you will set your community's bylaws. Depending on what method you selected in the earlier steps regarding who can change the community's rules, this step either requires a vote of the founders or a vote of the founders plus the community members to invoke it.

This step is large and ongoing and is broken down further in the Aquarius white paper. This can actually be structured in a flexible way by the user, but basically, a user account can attach itself (by mutual permission of both the user and the community) to one or more communities, and a user's status within a given community is called a membership, and it can also store currencies attached to its user number, like any crypto-wallet. Each membership has basic attributes that can be assigned to it, namely rights (which is what you will receive from your membership "responsibilities" (which is what you've agreed to contribute to your community) and voting privileges (which can be tiered and exist in multiple instances).

Communities, in turn, have members, positions (which are similar to *jobs* in legacy corporations), institutions (which are like committees within communities, designed to manage certain functions, education say, or medicine), assets (which are things the community owns), alliances (which temporarily join two or more communities, with members inheriting the respective rights and responsibilities of

each), and the bank (a special class of institution overseeing the community's monetary base). Again, these are just basic examples. New classes of attributes can be created and assigned by individual communities as they see fit.

Simple Fixed Basis Model

The simple fixed basis model (SFBM) is perhaps the simplest, "least thought required" model of community because almost everything is fixed from the beginning and all the inputs and outputs are known up front. It may not accommodate growth over time in sophisticated ways, but it is extremely simple to start.

SFBM is a crowdsourced, fixed input/fixed output community whereby the contributions from and benefits to each member are fixed from the beginning. It is perhaps the easiest to understand conceptually as well as one of the easiest to start. It is simply a multiparty contract wherein each member agrees to contribute one set good, at a regular interval, in exchange for receiving (or having access to) all the goods from the other members. Let's say I'm a baker. I love baking; it was my trade before joining an Aquarius community. I agree to make 40 loaves of bread, 30 tarts, 15 apple pies, and 18 pretzels a week. For this, I receive 1300 crystal tokens (my community's currency). Each pie sells for 3 crystal tokens, and each pretzel is one crystal token and a loaf of bread is 2 crystal tokens.

Let's say there's another member and she is a fashion designer. She makes shirts, pants, blouses and dresses in a few styles each, and she agrees to make 5 dresses, 8 shirts, and 2 pairs of socks each week. Each shirt sells for 10 crystal tokens and a blouse for 15, and pants for 7 and she receives 1500 crystal tokens a week for this work.

There's another person who's a doctor, and another a teacher, a shoemaker and so on. The relationship between them looks like one of those diagrams of a crystal with straight lines drawn between all the points in a geometric pattern.

Provided you have all the basic needs of a person covered, such a setup could exist indefinitely, forever with the same output and the same input, in a very stable condition. Such a thing could be very easy on the mind. A person is employed for life and they would also have their basic needs met for life in a perpetual state like this. Furthermore, the hours and outputs are fixed so it doesn't eat all of a person's time. Of course, one may want more out of life, to have more excitement or so on, but that's what the speculative economy is for. That's what *all the rest* of what we have now is for. That's 1; this is the 0.

Think about it. Just with that setup alone, you have sustainability, you have efficiency of resource use, you have a built-in audience. You have community, and you have stability. That's only the start. Even just that would be wonderful for lots and lots of people worldwide. Just that is enough. Now, think of the things you could add to it. You could store up resources, food, water, and other supplies, like the survivalists do, but at a community scale, a true community of *thrivalists*, not merely surviving but thriving. You could have a couple security guards as members of the group and then you've provided for the common defense. Now think further. You have one person doing one thing, one skill per person. Could robots or machines replace some of those skills? Yes they could, right? You already have things like the Baxter robot which can learn skills from observation. Some Baxter robots have been trained to cook, to sew, and do other things. And there are machines that can produce clothes from start to finish, just load the cloth in. 3D printers, of which most people are familiar, can make many, many kinds of objects out of various materials and some of them now can even make *buildings*. Whole buildings, houses, sheds, etc. can be *printed out.*

So, let's say the community buys a Baxter for the chef and the chef trains the Baxter, so now the Baxter cooks, and now you can get food at any hour of day or night without any additional labour from the chef. In fact, he can even take whole days off and come back sometimes and supervise the robot. But he's still making the same paycheck, because the community controls the bank and the paycheck can be

whatever you want (or at least whatever was agreed on when the contract was made). The community buys a Sewbo (a type of sewing robot) for the fashion designer and on and on through the various professions. There are even farming and seed planting robots now. It would be impractical for a person to own all these technologies themselves, but what is a $3,000 robot crowdfunded by 100 people, right? Of course some of these technologies are still imperfect and some jobs automate less well than others, but you can think of it like compound interest on labour.

The same technology that enabled the industrial and information age scale of production, now becoming miniaturized will enable *community scale* of worldwide local production. The more you build up in automation over time, the easier everything gets and the less everyone has to work to maintain the same quality. You may even be able to achieve a *free pool* of robotic labour that members are able to draw on with almost zero input. Not absolute zero, but near zero. It may seem like a fantasy but advances in AI and robotics are already making this possible. But the "how much automation?" question is left to each individual community to decide. I'm just giving an example. Not everyone loves so much technology. Some will inevitably opt for an agrarian human and land based approach. A diversity of viewpoints is healthy. It's normal. It would be strange, wouldn't it, if everyone agreed on the same approach? Which is one of the reasons for the whole Lifestyle Design approach in the first place.

An Example of How Life Works in a Lifestyle Design Community

Jamie woke to the sound of the cock crowing. Groggily, she thought she was back on her parents' farm, but the sight of Baxter, the lovable coffee-serving robot, roaming the corridor below reminded her she was in Ecotrope, and the sound she heard came from their community farm tucked neatly between their office and residential towers.

She rolled out of bed and logged into the Aquarius app.

She was new to Ecotrope, so she was still learning how to use the thing. She saw she had still had 27 coffees remaining to redeem for the month. She also noticed she was scheduled at the educational institute for her weekly 4 hrs of work, in twenty minutes, so she'd better hurry over to the office tower. She grabbed her bag, nudged her floor-cleaning robot, and shut the door to her residential suite.

On her way over to the office, she grabbed a strawberry tart from Samantha, the pastry artist whose shop sat adjacent to Ecotrope's rooftop hydroponics garden, which grew the fresh strawberries she used for her tarts. She scanned the QR code of the shop's display for strawberry tarts, heard a beep and saw a tiny amount deducted from her balance of qmetal, the name of Ecotrope's community cryptocurrency.

She waved to Sam and continued toward the office tower. Her phone plinked and she saw it was a notification from the Aquarius app. A proposal was incoming to create more solar panel arrays on the roof of the residential tower. She saw from the proposal summary that it would cost .000086 qmetal per member (of which Ecotrope currently had 1031 members) to fund the solar array, that a yes vote required immediate payment, and that a yes vote would also grant a member voting privileges in the solar array institution - created in the event of successful funding - and that a yes vote gave a member one share of the array's ownership, should it ever be sold later. The voting would open at 5pm that evening and close at 5pm three days later. She made a mental note of it and continued on.

That weekend, while taking in some Nightflix on her couch, she voted yes on the solar array proposal. Later, she saw the proposal had reached the funding threshold and passed, saw the qmetal deduct from her account and saw the solar committee voting privilege appear in her rights column and the share appear in the shares column of the personal view interface in the Aquarius app. Baxter brought her some espresso. Life was good.

* * *

Next, you would set the rules by which a person could join the community, the

rules by which a person could leave the community and what would happen if a member were essentially kicked out (forced exile, forced sale of shares) and the rules by which this could occur. Aquarius stores such information and displays it to potential joining members in much the same way typical software asks a person to accept terms and conditions upon installation.

Once these basic parts of a community are set up, the Aquarius app can optionally output legal documents that outline in legal terms what the members of the burgeoning community have agreed upon. There is a multi-party contract or a series of contracts between members, depending on the legal framework of the country a given community finds itself in. This helps to "set" the community within the bounds of the law where it physically exists.

For communities whose members cross international boundaries, a kind of "templated" contract can be output on the basis of international commerce law (law of the high seas) or similar, though it will be subject to interpretation depending on which jurisdiction it's in. An example legal document may resemble the following summary, in brief:

* * *

We, the following undersigned, do hereby form this corporation named (community name) for the purpose of (any lawful purpose) in (state or jurisdiction it is in). We, the undersigned, agree to perform the functions of said (member positions in the software smart contract) in good faith to the best of our ability until such a time that our contract is terminated by either us or other parties to the contract (at will). We acknowledge that at such a time, we will be compensated for any shares or assets we had title to under the contract, according to the rules outlined in the contract. In the case of a dispute, we the undersigned agree to abide by the result of binding arbitration under the authority of (community name) as allowed by law.

Example of the Advanced Crowdfunding Model

Jamie was browsing the lifestyle design communities' "now forming" boards and

noticed a community called Brightplace. She noticed it had several features she wanted, like 65% override consensus voting with vote delegation, single transferable vote and ranked candidate voting. There were several positions open for teachers, so she decided to apply.

Brightplace was set to launch in 30 days if all the positions were filled. There were positions for a doctor, a mechanic, a chef, a firefighter, a fashion designer, a computer programmer, a librarian, several teachers and security guards, numerous cooks, 3D printer operators, a secretary, a banker, a lawyer, multiple carpenters and construction professionals and a full-time poet. She saw the English teacher position was open so she applied for that, which also required a $2500 buy-in, payable upon acceptance.

*She saw in the description that once formed, she would be issued 10,000 Brightcoins, the name of the community currency. As an English teacher, she would agree to work at least 16 hours per week for a rate of 40 brightcoins per hour paid directly to her by the bank, plus bonuses for student happiness as expressed in her position's feedback score. She uploaded her resume through the forum's digital portal and crossed her fingers. A few weeks later, she saw Brightplace had commits from 65 members and it had filled all positions, so it would form. They would use the capital they had raised from member buy-ins to purchase an abandoned urban building in which to quarter the community's members and for office space. And *smile,* she had been accepted! It was time for a new beginning...*

The initial publicly available builds should be living here: https://github.com/CourtReinland/Aquarius

Updates on the overall Aquarius and other affairs should be able to be found here: https://aquarius.community/

You can support what we are doing here: https://patreon.com/courtreinland