WHITE PAPER | VERSION 1.2

DRAFT, MAY 2017

Liquid Asset Ecosystem

For Internal Distribution Only

INDEX

Fluon

Liquid Asset Ecosystem

Francisco Gordillo & Carlos Buendia & Cristina Carrascosa
+ Alfonso León & Francisco Velazquez

Abstract.
The irruption of Blockchain technology has meant the re-conceptualization of money and value, adding unprecedented data privacy, security and trustless freedom. The appearance of a large number of cryptocurrencies has brought about the birth of a new asset class. In the long term, traditional asset management will end up transitioning to efficiency-enhancing blockchain based systems. The future will bring a tokenization of almost anything or everything. This highly tokenized world needs tools for management in the decentralized future, mainly; off-chain asset tokenization, the pooling of capital for joint investments and the provision of a liquidity rail to seamlessly re-allocate risk in a frictionless manner. The coming together of these tools whilst staying true to the decentralized philosophy has given birth to the FLUON ECOSYSTEM, a space where investments, actors and tools flow without barriers, cohabit and co-operate in fluid connection, fostering the Ecosystem's growth, laying the foundation for the future of decentralized asset management.

01
INTRODUCTION

Technological evolution in recent decades has resulted in the creation of a global system of interconnected computers. Simultaneously, the internet has pushed the human race into a state of permanent connectivity, wherein content can be distributed, articles sold and bought, and ideas transmitted freely throughout the world, has fostered the re-definition of large industries such as retail, logistics, media, and entertainment. Across the board, this has changed the way in which humanity accesses and shares information, works, and engages in business.

.

The appearance of bitcoin (BTC), the subsequent surge of the "Decentralised Movement", and the deployment of the blockchain as a vast global ledger, running on an almost unlimited number of devices and open for anyone to use, is the next step in the evolution of technology.

Through the blockchain, anything of value – not just information – can be stored, transferred, and managed in a secure and private way. Money, deeds, identities, votes, real estate, man hours, art ... anything!

To fulfil a vision where anything and almost everything can be encapsulated in a token of value or cryptocurrency, a tokenization framework had to be established.
Many hours of work on the fundamental properties pertaining to any asset at an atomic or granular level (whether crypto or not), paired with a legal analysis, will serve as the keystone to a future in which the world will be tokenised, and the creation of token-based complex structures can be achieved.

Such a future, in which the number of cryptocurrencies will range in the hundreds of thousands (if not millions), requires tools to facilitate investment and management. Furthermore, appropiate tools are neccesary to provide liquidity to minor tokens. Nevertheless, such a transformation does not happen without an incentivised community. Thus, the creation of a new incentive concept, Ecosystem Mining, where actors can be automatically remunerated for fostering the ecosystem's healthy growth via the creation of software in the form of gadgets, providing services or increasing the overall mass of assets in the system.

The creation of a context in which the solution to tokenising anything could operate in a decentralised, incentivised, liquid, and automatic manner, whilst staying true to the philosophic and intellectual framework of the decentralised movement, has taken us down a rabbit hole from which the FLUON ECOSYSTEM has emerged, a LIQUID ASSET ECOSYSTEM

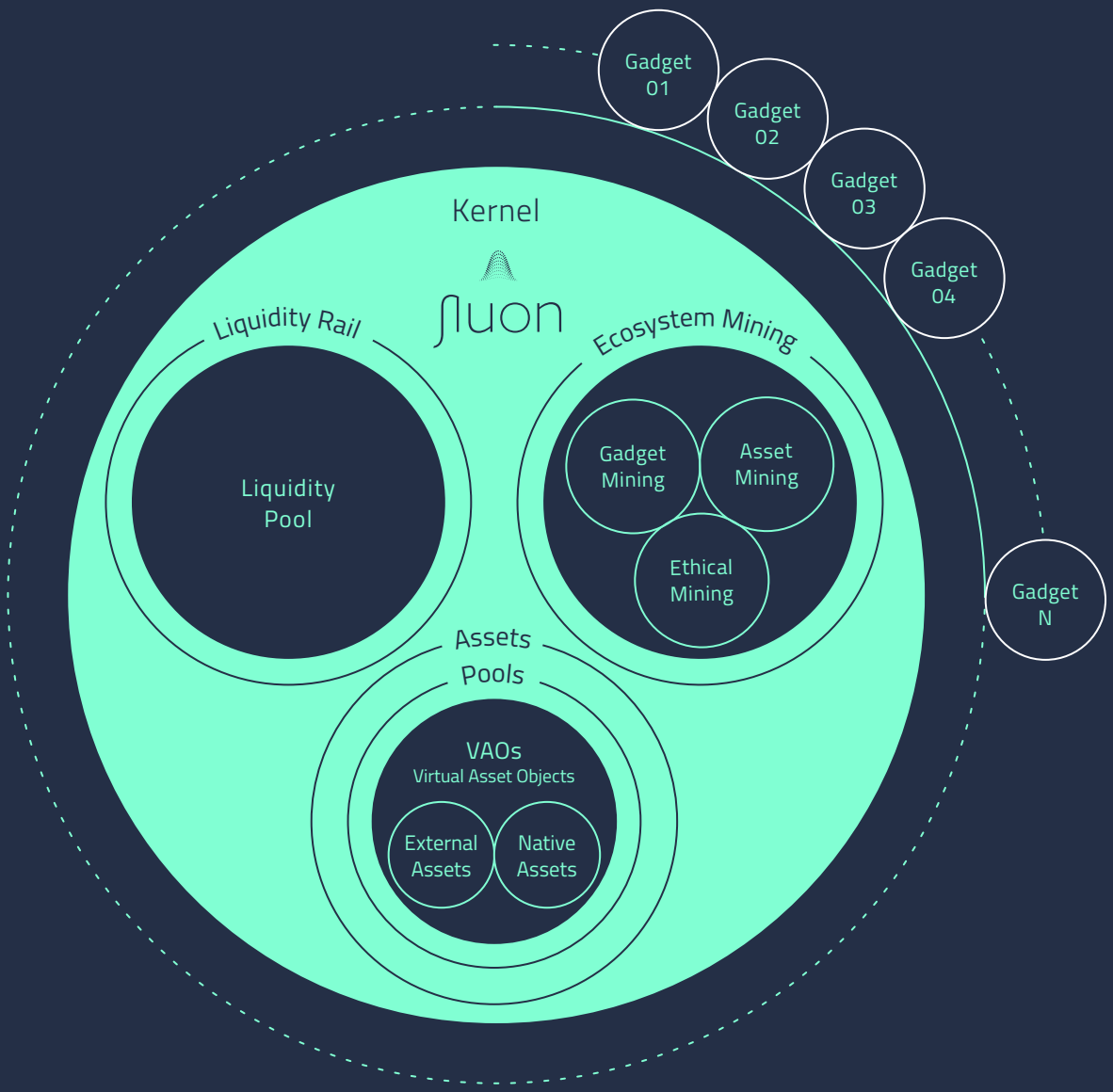
.

THE REVOLUTION WON'T BE TELEVISED,
IT WILL BE TOKENIZED!

02

FLUON ECOSYSTEM

The Fluon Ecosystem comprises the Ecosystem Kernel (core smart contracts that define the ecosystem's behaviour) and Ecosystem Gadgets, understood as external contributions complementing the Kernel's logic.



FLUON ECOSYSTEM ARCHITECTURE

2.0 - Design Rationale

The Fluon Ecosystem is not designed to provide a unique solution to the abovementioned challenges of tokenisation, pooling, or liquidity. Rather, it serves to provide a general set of flexible resources that allow anyone to develop and put forward their own proposals. To meet this challenge, developments will be subject to improvement to embrace more generic approaches.

Whilst full decentralisation will always remain at the heart of every development, those cases in which it cannot be achieved constitute the starting point to drive the evolution and improvement of fully decentralised schemes and protocols.

All solutions proposed in this paper respond to this rationale.

2.1.- Kernel

The heart of the Fluon Ecosystem is the Kernel, an aggregation of a complex network of Ethereum-based Smart Contracts and protocols that govern and regulate all activity. It defines all core logic that actors will follow, providing them with mechanisms to interact with and within its context, whilst preserving the economic rules needed to incentivise and foster growth and prosperity.

The protocols and functions that come together in the Kernel are grouped into four main categories; Assets, Liquidity Rail, Ecosystem Economics, and Ecosystem Mining.

2.1.1- Assets

Assets are understood as anything having value such as a possession or property, owned by any account (user). Further than understanding FIAT, real estate or art as assets (just to name a few), the future will bring abstract asset representations like an hour of work, a song, power or tickets to an event. In the following sections, the understanding of asset representations will be divided in two different contexts:

- Underlying Asset: An asset whose value is to be represented in the blockchain.
- Asset Proxy: An ERC20 token representation of the underlying asset.

Given the generalised approach proposed in the Design Rationale, along with its current implementation, the present paper studies how assets in the blockchain context can be managed to identify common structures that allow the tokenisation of any asset on the blockchain. This entails an exploration of a broad collection of uses, ranging from fully decentralised to centralised approaches. Three main challenges must be tackled:

a) Asset tokenisation, understood as the initial process that represents the necessary properties to deploy and preserve the total value of an asset;

b) Price discovery of the Underlying Asset;

c) Asset de-tokenisation, or redemption to the token holders.

2.1.1.a Tokenization

One of the most commonly faced challenges when tokenising assets is the issue of how to represent the inherent value of the Underlying Asset accurately. The value of the Asset Proxy will vary depending on the quality of the representation, and formally speaking, this relationship can be represented as follows:

$$V_{\psi_k} = V_{\psi'_k} - \theta$$

where $V_{\psi'_k}, V_{\psi_k} \quad \theta \in \mathbb{R}^{+}; \; 0 \leq \theta \leq V_{\psi_k}$

Where ψ_v represents the Asset Proxy, ψ'_v Underlying Asset, V_{ψ_v} and $V_{\psi'_v}$ the value of the different asset parts, and θ the Value Discrepan-

Factor, which stands for the quality of the representation. Given the context, the optimal function can be understood as one in which the Underlying Asset equals the value of the Asset Proxy whilst preserving decentralisation.

Although defining values for the Underlying Asset and Asset Proxy as separate entities have been identified, it is difficult to define an asset that accomplishes effective asset representation without creating a value discrepancy.
Examples of assets that accomplish the value preservation objective with some degree of centralisation can be found at Tether[1] (a tokenised USD asset using BTC and the Omni protocol),[2] and Digix[3] or Vaultoro[4] (which tokenise gold).On the other hand, it is easy to find examples of decentralised asset representation tokens without a point of centralisation. It is notable that these do not preserve the underlying value for most of the uploaded tokens on asset protocols such as Open Assets[5].
In order to study the tokenisation of assets on Ethereum, it is necessary to differentiate between two different groups of assets:

- Internal Assets: Ethereum tokens managed directly by the ecosystem itself. In this case, the token value is directly pegged to the Underlying Asset. Practical examples of internal assets include any ERC20 token or the future contract of an ERC20 token;
- External Assets: Asset representations stored external to Ethereum. The complexity in dealing with these assets is greater than that of Internal Assets, since tokens (or Asset Proxys) themselves may not truly represent the value of the underlying asset, thus being dependant on the nature of their context[6].

Given different contexts and natures, no unique and optimal solution is sufficient for all cases. However, it is possible to find common mechanisms used by representing functions in multiple working examples applied to different contexts:

- Asset Issuance: Creation of the on-chain record of the asset (e.g. creation of an ERC20 token or a new asset on Omni);

- Asset Evidences: A proof of the existence of the represented asset in the underlying asset context. Depending on how this proof automatically determines the authenticity of the Underlying Asset and its dual byzantine fault tolerance, these can be classified into two groups:

-Non-deterministic asset evidences: Those where the values of the Underlying Asset and Asset Proxy aren't necessarily equal. They usually rely on document links that certify the existence of the Underlying Asset. Working examples of the usage of asset evidences are Tether, in its Proof of Reserves when representing USD, or Digix Gold in its Asset Card when representing gold.

- Deterministic asset evidences : Where values of an Underlying Asset and its Asset Proxy are equal, thus solving the optimal representation

[1] Tether: https://tether.to/ [2] Omni Protocol: http://www.omnilayer.org/ [3] Digix: https://www.dgx.io/ [4] Vaultoro: https://www.vaultoro.com/ [5] Open Assets Protocol: https://github.com/OpenAssets/open-assets-protocol
[6] It's important to note that not every Ethereum native token has to be necessarily a native asset, as representation of Ethereum tokens could also be made (e.g: representation of an ETH deposit).

function. This is the example of a BTC transaction hash (that can deterministically prove the ownership of BTCs via BTC Relay) or the bytecode of an Ethereum call to a certain contract.

- Authority signatures: In situations where the asset evidence is not deterministic (e.g. in the off-chain context), regular signatures on the asset evidences from one or multiple trusted third parties are commonly required. In the examples given above, both Digix and Tether use regular signatures to certify asset evidences from auditors.

- Custodians: Trusted third parties different from the asset issuers upon which the "storing" of the Underlying Asset is delegated, thus adding an additional element of trust to the Asset Proxy. Consequently, this reduces θ or the Value Discrepancy Factor.

2.1.1.b Price discovery

In order to create and sell the shares of an Asset Proxy, it is necessary to obtain the price of the Underlying Asset. To accomplish this, two different working cases can be found:

- Liquid Assets: Assets which have a price in an exchange market. In this case, the value of the Underlying Asset (internal or external) is obtained via a call by a datafeed Smart Contract. There are two ways to obtain their price:

-Internal Assets: Where the price is obtained from decentralised exchanges, such as 0x[7] or EtherEx[8].

- External Assets: Where the price is obtained from an external API using an oracle (through an Oraclize[9] Gadget in the case of the Fluon Ecosystem) or exchanges such as Kraken[10] and Poloniex.[11].

- Illiquid assets: Assets which aren't priced in any exchange whose price is obtained from a oracle.

2.1.1.c.- Redemptions

In the same way an Asset Proxy can be created by tokenization, methods to untokenize the asset, or unlink the proxy (total, or partially) from the Underlying Asset should be created (for example, in case that the current underlying owner wants to exit its position). In order to allow this, share buyback mechanisms can be applied, whereby the correspondent amount of tokens should be bought in the marketplace and burnt through a burn-contract. Given a blockb0 as the percentage of the total tokenised asset to be redeemed, this process can be formalised as follows:

$$S_{\psi_k}(b_0 + 1) = S_{\psi_k}(b_0) \cdot (1 - r)$$

$$\Delta v_{\psi_k} = 0$$

[7] https://www.0xproject.com/pdfs/0x_white_p [8] https://github.com/etherex/etherex
[9] http://www.oraclize.it [10] https://www.kraken.com/ [11] https://poloniex.com

2.1.1.d- Virtual Asset Objects (VAO)

Given the previous overview study of Underlying Assets and Asset Proxys, the creation of a generic object that complies with all considerations is a must. This is because the process ensures that friction is reduced for new users and, moreover, that a new Asset Proxy is issued. VAOs represent the minimum storage of value that the network will lay upon. The objective of VAOs is to solve the aforementioned challenges, thereby allowing for the creation of more complex objects (as will be discussed in due course). Examples of such objects are given below:

- Asset tokenization: By implementing the common mechanisms used by most of the current tokenized assets.
- Price discovery: By setting a standard API to set the price via a preselected price feed.
- Redemptions (optional): By allowing the share buyback mechanism any time the owner of the Underlying Asset wants to unset it from the Proxy Asset, by redeeming in ETH.

In order to allow the creation of any specific representation function, the following fields are included in the VAO (complementary to ERC20 functions):

- Evidences: A set of resources (deterministic or not) that prove the existence and ownership of an underlying asset and its on-chain proxy. Following the general approach which characterises VAO design, evidences will not be of a unique type.
- Validations: A set of validations given by one or more external reputed accounts via the signature of a recognised actor. They can be linked to a Proof of Asset, and are sometimes necessary when the proof is non-deterministic;
- Custodian: Address of a delegated owner of the asset. Sometimes to be included in the validation process;
- Witness: An optional unique address (multisig should be made externally). When set, the transaction in the proxy context will depend on this address confirmation;
- Price: Price of the current VAO, to be called by the current price feed only;
- Price_feed: Address of the data-feed that will set the price.

Since the VAO's design rationale aims to creat generalised standard, no single method to use its inner functions exists. Nevertheless, several examples of the usage of its fields by different assets are given below:

	EXTERNAL ASSETS			INTERNAL ASSETS
TYPE	OFF - CHAIN	CRYPTO	ERC20	ERC20
Evidences	ENS hash to Swarm document	tx hash	Bytecode (Ethereum call)	_
Validations	Witness or Notary	-	-	_
Witness	Escrow provider	Escrow provider	-	_
Price	Data-feed	Data-feed	Data-feed	Set by *Liquidity* Pool
Price Feed	Oracle	Feed address (Pointing to external URL)	Feed address (Pointing to decentralized exchange)	*Liquidity* Pool address

VAO usage examples

VAO usage example: startup equity

A use case of the VAO can be illustrated through the Non-Redeemable Asset Tokenisation Protocol (NRATP). This was specifically designed and tested as a Proof of Concept for the Fluon Ecosystem.

When applying the NRATP to real assets (i.e. off-chain assets), these are replicated on-chain in a fully legally compliant way as a result of the efforts from both the development and legal team. Considering start-up equity as a working hypothesis in this VAO creation example, the Fluon Ecosystem conveys the following:

1.- The first step in the NRATP process takes place in the off-chain domain, and it accompanies the off-chain purchase of third-party equity (i.e. the Underlying Asset) by a legitimate company. This is subsequently translated into documents certifying the ownership of the asset, which are then uploaded to a Swarm[12] document and linked via a ENS Namehash.[13]

[12] http://swarm-gateways.net/bzz:/theswarm.eth/ [13] https://ens.domains

2.- Following this, the legal-programming symbiosis of the Fluon Ecosystem design (represented by employing the evidences and validation fields) facilitates the production of an audited and witness-signed on-chain proof that certifies the following:

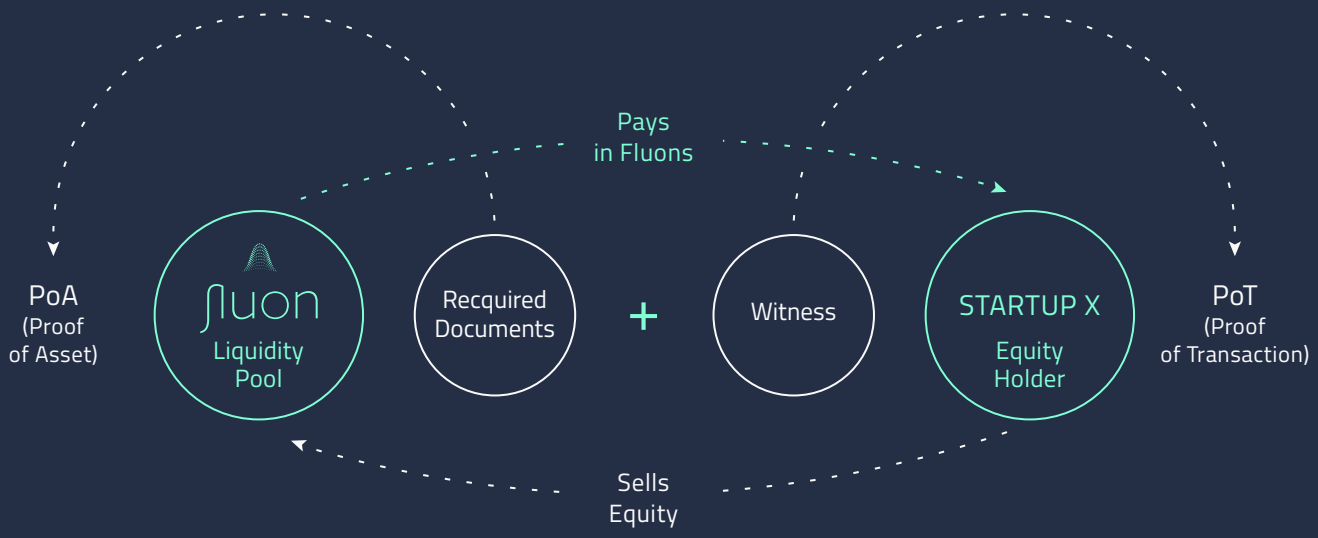
i) The acquired shares are legitimately owned by the vendor;

ii) The ownership transfer has been successfully completed and their ownership has been effectively transferred to the buyer that has deployed them in the Ecosystem.

Thus, any user can transparently certify that assets have been securely purchased, and no legal risk is involved in the ownership transfer.

3.- Although the evidences are not subject to change, different auditor accounts proceed to validate that current equity property lies with the VAO owner;

4.- Once the owner of the Underlying Asset decides to exit its position (totally or partially), they will redeem the VAO with the total amount received in ETH, proportionally rewarding each of the token holders (see the Redemptions section).



REAL ASSET TOKENISATION

2.1.1.e Holding Arrays

Every VAO in the Fluon Ecosystem may be owned by one or more actors. Thus, every account a will have a basket of owned assets, defined as the asset holding array. Formally speaking, this can be represented as follows:

$$h^a = (h^a_{\psi_1}, h^a_{\psi_2}, \ h^a_{\psi_k}, h^a_{\psi_N})$$

where, by convention:

$$h^a_{\psi_1} \equiv ETH\ holding\ amount\ of\ array\ a$$

$$h^a_{\psi_2} \equiv FLN\ holding\ amount\ of\ array\ a$$

In the same way that Ethereum "uses" two conceptually different kinds of accounts, it is convenient to differentiate two kinds of Asset Holding Arrays:

- External Arrays: Those arrays owned by an Externally Owned Account (EOA) where the given account has total control of incoming or outgoing assets. Its behaviour is similar to a wallet contract of ERC20 Tokens.

- Pools: Arrays owned by a Smart Contract within the Fluon Ecosystem, used to create collaborative investments according to the economical rules established in the Kernel. Although they can perform an authoritative role (i.e. as manager), the management of the internal assets is dependent on the economical rules established by the economics of the Ecosystem.

Since one of the core objectives of the Fluon Ecosystem is to afford every account with the freedom to choose between being an investor or a third-party investment manager, every external array can be transformed into a Pool at any point in time by becoming a new VAO of the system.

From a technical perspective, every Asset Holding Array implements two distinct functions which represent the different transactions that every holding array may perform. These are given below:

- Add position: Adds a new VAO holdings to the Holding Array.

$$h_a(b_0 + 1) = (h^a_{\psi_1}(b_0), \ \dots, \ h^a_{\psi_k}(b_0) + \beta, h^a_{\psi_N}(b_0))$$

- Remove position: Removes a certain amount of the selected VAO from the Holding Array.

$$h_a(b_0 + 1) = (h^a_{\psi_1}(b_0), \ \dots, \ h^a_{\psi_k}(b_0) - \beta, h^a_{\psi_N}(b_0))$$

Where β represents the amount for the selected transaction.

2.1.1.f- Pools

Pools are Asset Holding Arrays created to allow for collaborative investments. In order to achieve this objective, any holding array can be converted into a new VAO by granulating its position in different shares (ERC20 Tokens) constituting its total supply.

In order for the above to be true, certain variables must be defined:

- Pool (VAO): A Pool can be regarded as a VAO. To be more precise, VAO Pools will be referred to in the following sections as pn, while its Underlying Assets will still be noted as ψk, where n is the index of the current Pool. By convention, two formally different Pools (explained in due course) will be differentiated:

$$p0 \equiv \textit{Liquidity Pool}$$
$$p1 \equiv \textit{Ecosystem Mining Pool}$$

- Holding Value:

$$V_{pn} = h_{pn} \cdot v_{pn} = \sum_{k=0}^{N} h_{\psi_k} \cdot v_{\psi_k}$$

To facilitate the creation of collaborative investment Pools, it is important to recognise that these differ from any other external array owing to the fact that they can be granulated in different shares. Since the management of the current Pool investments is facilitated by a limited group of accounts (i.e. Pool Managers), most accounts are likely to choose a passive position in the ecosystem by purchasing the shares of different pools. This is especially likely to be the case when no incentive exists to take an active position. Thus, it is necessary to permit the creation of incentives for those who decide to become Pool Manager.

Incentives

In order to incentivise Pool Management, the ecosystem should be able to add different ways to reward activity of this kind. Thus, two different incentives can be selected by the manager:

- Management Incentive: Additional tokens automatically created to reward Pool Managers. Since different asset holdings will be associated with different management costs, this parameter is left to the discretion of the manager, being the market responsible for deciding if the parameter is acceptable or not. The total supply will be changed in benefit of the Pool Manager's holding array as follows:

$$S_{pn}(b_0 + 1) = S_{pn}(b_0) \cdot (1 + \mu)$$

  Where b0 represents the current block; and μ represents the selected management fee, moved to the holding array of the Pool Manager's account. It is important to note that the usage of the management fee will represent a dilution of the current holding value of the Pool's shareholders, as its VAO unit value will be reduced in the same proportion.
  The selected management fee will be established on an annual basis, but Pool Managers will be able to derive its proportional value (thus, minting new Tokens) at any point in time.

- Success incentive: Incentives applied to incentivise the successful management of the Pool. They are applied when the Pool removes a position from its holding array and the difference from its entry value exceed a certain threshold.

Formally, this is represented as:

$$S_{pn}(b_0 + 1) = S_{pn}(b_0) + (h^{pn}_{\psi_k}(b_a) \cdot v^{pn}_{\psi_k}(b_a) - h^{pn}_{\psi_k}(b_e) \cdot v^{pn}_{\psi_k}(b_e)) \cdot \alpha$$

Where b_0 represents the current block, b_e represents the exit block, b_a the entry block, and the α selected success incentive .

Investment and Redemptions

With respect to the actors who play an active role in the Pools, once their logistics have been defined, it is necessary to determine how a passive actor in the ecosystem may invest in such Pools.

Investing in Pools will differ depending on the nature of the Pool. Having said that, two different Pool Investment architectures are identified:

- Open Pools: The total supply of the Pool n S^a_{pn} will be modified when an actor adds a new position in the same proportion of the new added value. If an actor invests a certain quantity β in the Pool in ETH, this would be accounted as:

$$h^a = (h^a_{\psi_1} + \beta \ , \ h^a_{\psi_2}, \ldots, \ h^a_{\psi_k}, h^a_{\psi_N})$$

  And the amount of tokens added to the total supply, would be modified proportionally as:

$$\Delta S_{pn}(b) = \beta * \frac{v_{\psi_1}}{v_{pn}}$$

  Thus, maintaining the VAO unit value constant.

- Closed Pools: Where the Supply S^a_{pn} remains stable from the creation of the Pool (ignoring incentives), as it is not possible to add new value to the VAO holdings array.

2.1.2.- Liquidity Rail

If a hypothesis is accepted wherein the foreseeable future will result in the creation of a significant number of tokens (i.e. tens or hundreds of thousands), then it is plausible that the token universe will be disturbed in the form of a short-head and a long-tail. Here, the short-head will be ruled by a handful of reigning cryptocurrencies (i.e. BTC and Ether) and several token representations of FIAT money (i.e. USD, GBP, EUR etc.) or commodities (i.e. platinum, gold etc.). This type of distribution is similar to what has recently been witnessed in the content creation space, where the democratisation of the tools of

production, paired with the appearance of sharing platforms for related content (i.e. Wordpress[14], and YouTube[15]) brought about the re-definition of the media business.

In view of the above considerations, and in the same way that most of the previously mentioned content resulted in the emergence of considerable struggles to identify meaningful audience figures (thus implicating advertising revenue), a scenario in which most tokens and Pools have reduced liquidity is foreseeable. Consequently, it is imperative to create a construct that can provide liquidity to such pools within the Fluon Ecosystem. This is especially the case if the ecosystem is to become a useful tool for the management of cryptocurrencies and, moreover, if the transition of asset management businesses to block-chain based decentralised systems is to be catalysed.

Pool Tokens (or VAOs) are freely transferable. Hence, they can be traded in any exchange where they are listed or, alternatively, through decentralised services such as EthTrade,[16], Bitshares[17] or Changelly[18]. However, in case these external solutions fail to provide the desired liquidity, the Fluon Ecosystem provides a tool to "re-format" exposure and, in this way, gives the option to unravel investments in any crypto fund. This is referred to as a Liquidity Rail, the key purpose of which is to include the creation of a Liquidity Pool to facilitate value transfer within the context of the Fluon Ecosystem's own currency, the Fluon.

2.1.2.a.- Liquidity Pool

The Liquidity Pool has the ability to calculate values for Fluons and Pool tokens using data from an external data-feed. In addition, it can mint or exchange Fluons and Pool tokens based on their different valuations.

The Liquidity Pool acts as an exchange mechanism where the exchange of Fluons and tokens from different pools occurs in an automatic manner via Smart Contracts. Once an investor has exchanged their position from holding an interest in a Pool to holding Fluons, they have "re-configured" their position into a highly liquid currency (the Fluon). This process should be conducted in such a way so as to ensure that the total value held by the liquidity pool remains constant (or higher) following the exchange and token creation.

Bearing the above in mind, three basic scenarios must be considered;

- A Pool Token Holder (Pool Token n Holder) exchanges his position for Fluons.
  In this case the Pool Token n Holder would send an amount β of Token n to the Liquidity Pool. Since the Liquidity Pool is able to calculate the value of both, the Fluon and Token n, through the data provided by a price feed, freshly minted Fluons will be liberated to the original Token n Holder. In this case, since the Liquidity Pool would hold a position in Pool n all Fluon holders would hold such position in a

[14] http://www.wordpress.com/ [15] https://www.youtube.com [16] https://www.ethtrade.org/
[17] http://wwwbitshares.org/ [18] https://www.changelly.com/

surragate manner. This process can be understood as the creation of shares in an Open Pool. Formally this process would be done as follows:

$$h_{p0}(b_0+1) = (h^{p0}_{\psi_1}(b_0), h^{p0}_{\psi_2}(b_0) - \beta,\ h^{p0}_{\psi_k}(b_0) + \varepsilon, h^{p0}_{\psi_N}(b_0))$$

where

$$\beta = \frac{v_{\psi_k}}{v_{\psi_2}} * \varepsilon \text{ , such that } V_{p0}(b_0+1) = V_{p0}(b)$$

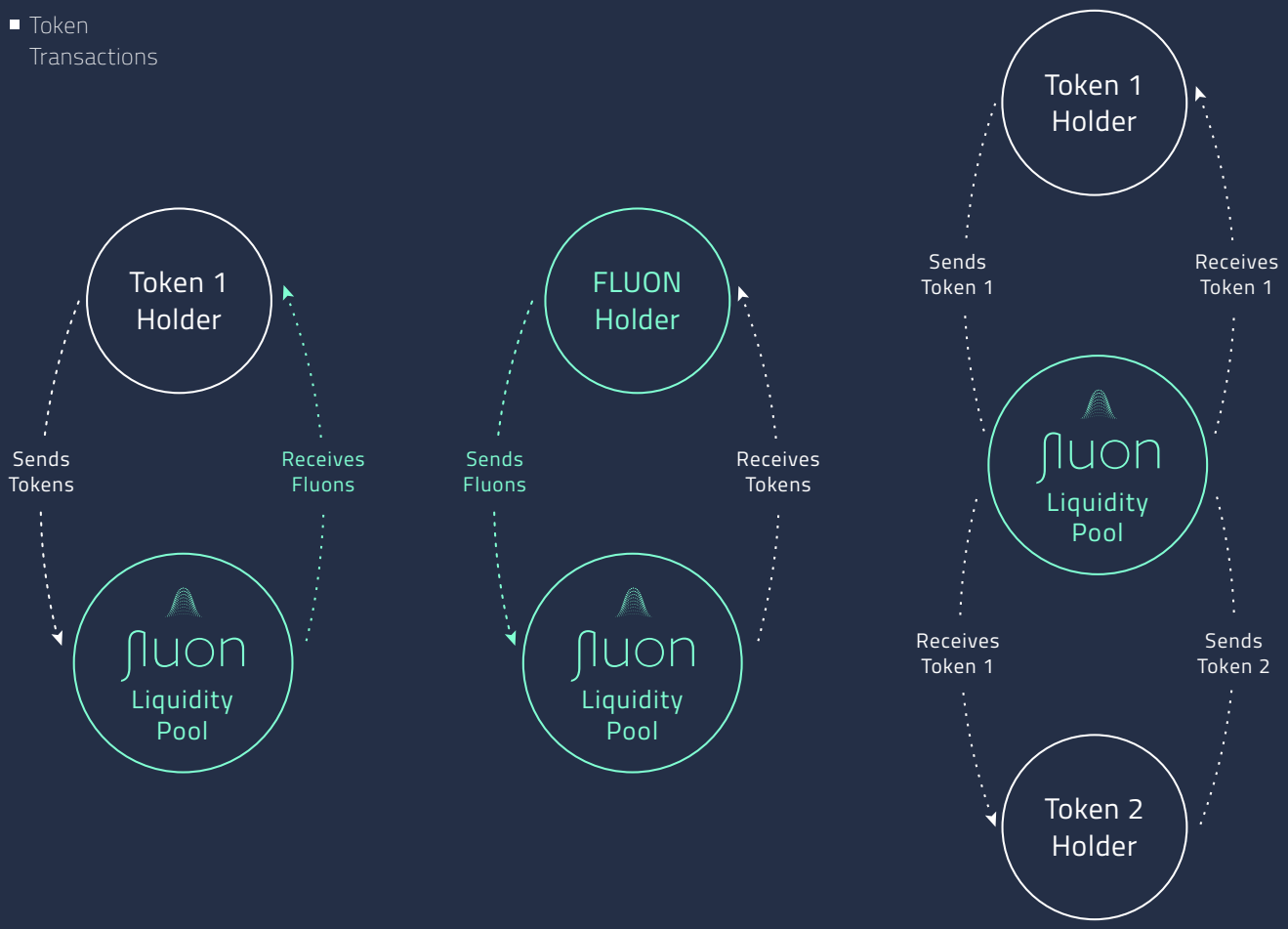
- A Fluon Holder (Fluon Holder) exchanges his position into a Pool.
  This scenario provides for a Fluon Holder sending an amount of Fluons β to the Liquidity Pool. Once again and following the previous case, the Liquidity Pool calculates value equivalences and determines amounts of Tokens and Fluons to change hands;

- If the number of Pool Token n held by the Liquidity Pool $h^{p0}_{np}(b)$ is smaller or equal to the number of tokens to be sent to the original Fluon holder, then they'll be sent to such Fluon holder, thus the Liquidity Pool will now hold Fluons.

- If the number of Pool Token n to be sent to the original Fluon Holder hpna(b) is larger than the Pool, then the Liquidity Pool creates additional Pool Tokens n and sends the necessary amount of Fluons to Pool n, according to the mechanics described in the investment section. In this case the original Fluon Holder now holds Tokens n and the Liquidity Pool the received Fluons.

- A Pool Token Holder (Token 1 Holder) exchanges his position into another Pool (Pool 2).
  In this case the same mechanisms described above apply, thus, the Liquidity Pool would re-distribute requested tokens to each holder adjusting the differences.

- All Fluon Transactions
- Token Transactions



LIQUIDITY POOL FLUON
TOKEN EXCHANGE MECHANICS

In addition to the abovementioned cases, it is also necessary for the system to provide Pools with the option of being open, thereby facilitating the opportunity to receive investment to promote the growth of their asset base. The mechanics "runs" in the following way:

- Pool 1 receives outside investment (investments will only be allowed in Ether).
  Pool 1 Receives an Ether investment from an outside source. Liquidity Pool receives external Ether, mints Token 1 and sends it to External Investor. Liquidity Pool sends Ether to Pool 1.

1. An external investor send ETH into the Liquidity Pool
2. Liquidity Pool send ETH into Pool 1
3. Liquidity Pool mints Token 1
4. Investor receives Token 1 from Liquidity Pool

INCOMING EXTERNAL ETHER INTO FLUON ECOSYSTEM FOR OPEN POOLS

In light of the above, the synthetic position of value underlying the ecosystem's proprietary token, the Fluon, will equal the addition of values of all tokens contained within the Liquidity Pool at any point in time, plus the Genesis Pools valuation (see Genesis Pool section) divided by the number of Fluons in circulation.

Although it is feasible to expect that the future will bring a time in which any Token from any Pool will be exchanged through the Liquidity Pool (and even the exchange of External Assets into Fluons), careful planning of the deployment or option to use the Liquidity Pool is required to avoid misuse.

2.1.3.- Ecosystem Economics

As described in the previous section, the ecosystem has a defined set of economic rules and incentives that govern the redistribution of value further than individual actions.

In this case, the Liquidity Pool manages Liquidity Gas, Pool Fees, Mining Rewards, and the funding of the ecosystem's Mining Pool.

2.1.3.a.- Liquidity Gas

This is equivalent to 0.025% of each transaction to be detracted each time a Token Holder calls the Liquidity Generation Smart Contract within the Liquidity Pool. These Fluons in their entirety are sent to the ecosystem's Mining Pool for redistribution.

2.1.3.b.- Pool Management Incentives

Pool Management Incentives: These are the fees that each Pool Manager defines at the inception of their Pools. They can be either static, such as a fixed Management Fees calculated on AUM (Assets Under Management), or variable according to certain parameters (such as performance). Once the fees have been defined by the Pool Manager, they cannot be changed unless approved by a DAO vote. Such a vote can only take place if n case that the Pool in question includes a DAO voting system.

The Liquidity Pool mints Pool Tokens equivalent to the pre-stated fees. A 20% of the total number of newly minted Pool Tokens are sent to the Ecosystem Mining Pool for re-distribution as Fluons.

The Pool Manager thus receives an 80% net fee in Token/s of his Pool/s under management.

2.1.3.c.- Ecosystem Mining Reward

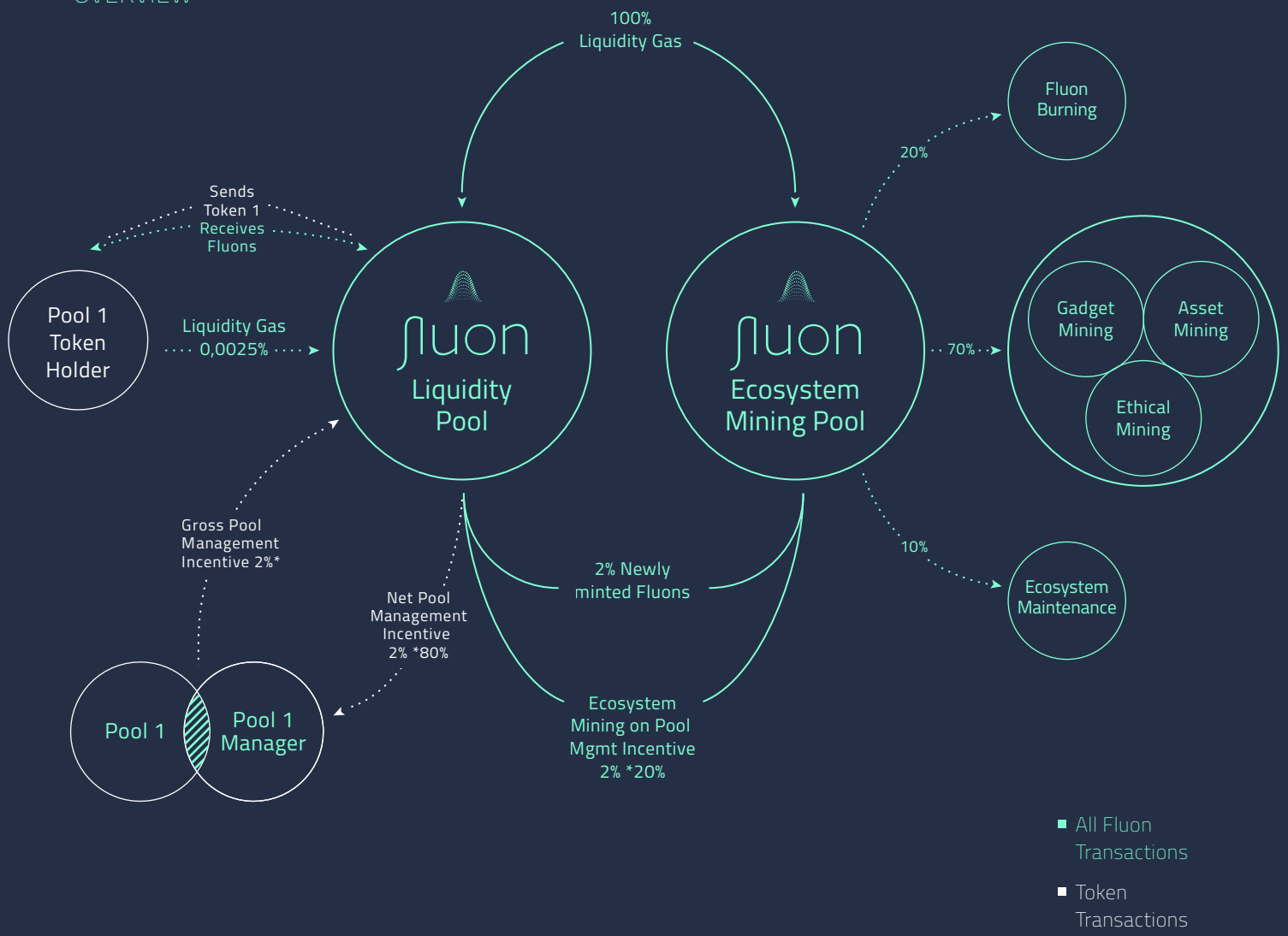
The Liquidity Pool will mint 2% of fresh Fluons annually to be distributed to the ecosystem's Mining Pool.

10% of the ecosystem's Mining Pool will be devoted to platform maintenance, development, and operating costs, as well as to promote the adoption of the ecosystem.

20% of all Fluons contained within the ecosystem's Mining Pool will be burnt in order to stabilise the monetary mass in circulation, as well as to provide growth for Fluon holders indirectly. In a nutshell, if 20% of all activity within the ecosystem flowing through the ecosystem's Mining Pool is higher than the annual 2% of newly-minted Fluons, then the Fluon operates as a deflationary coin. This has the effect of further rewarding all Fluon holders.

The economic scheme of incentives provides the necessary economic fuel (in the form of Fluons) to redistribute wealth resulting from ecosystem dynamics to those that work or perform actions that foster its growth and well-being. This process has given birth to a new concept, Ecosystem Mining, which will account for the redistribution of the remaining 70% of the ecosystem's Mining Pool.

FLUON ECOSYSTEM
CRYPTOECONOMICS
OVERVIEW



2.1.4.- Ecosystem Mining

From an anthropological perspective, the study of actors interacting with and within an ecosystem or closed community should define for the common minimum denominators to fix the set of rules and incentives that govern relations in such a context.

The Fluon Ecosystem's set of rules and incentives takes into account two common minimum denominators: 1) Money (or a representation of value); and 2) the Common Good or well-being of such an ecosystem.

In view of these considerations, unifying both denominators in coordinated fashion is imperative for the future prosperity of the Fluon Ecosystem.

In Bitcoin technology, miners are defined as those actors that execute a computational review process of each block in the blockchain. As such, miners act on behalf of the benefit of the whole community by providing an essential service. Without such computational reviews, decen- tralised systems could not exist. Hence, in this scenario, the Common Good refers to the system's conciliation, node running, and ledger maintenance, for which the system itself has an in-built incentive process: Minting (Money or Value) or Mining.

On the basis of this idea, and the will of building a "to the people" system, the more actors that collaborate for the good of the ecosystem, the larger, richer and more prosperous it will be.

This incentive system works by re-distributing rewards springing from the Ecosystem Mining Pool. Such re-distribution takes into account both; the nature of the performed action, and its intensity in the context of overall activity within the Ecosystem.

2.1.4.a.- Incentives.
The system of incentives for Ecosystem Miners is equal to the addition of all incentives and frictions from all activities, plus an annual 2% of freshly minted Fluons (see Ecosystem Economics) minus a 20% to be burnt and a 10% for Ecosystem Maintenance. This is, 70% of all rewards re-distributed by the Ecosystem Mining Pool will be destined to Ecosystem Miners.

At present, three basic types of mining have been considered depending on the nature of the performed action: Asset Mining, Gadget Mining, and Ethical Mining. It is important to note that each one rewards a different kind of action or decision. Asset Mining rewards those managers who re-invest their fees into their Pools; Gadget Mining rewards developers according to how broad the use of their gadgets is (independent of being free or not); and Ethical Mining rewards those who actively engage in ecosystem decisions (for instance, by participating in DAO voting).

Whilst this is a new concept that requires further development, we foresee an extension of the abovementioned cases into additional activities, which will be proposed for approval via the DAO governance system.

[19] Bitcoin: A Peer to Peer Electronic Cash System https://bitcoin.org/bitcoin.pdf
[20] Bitcoin Mining: https://en.bitcoin.it/wiki/Mining

2.2.- Gadgets

As defined by Vitalik Buterin, gadgets are mechanisms used by other mechanisms. Their function is to complement the ecosystem by providing a large number of options to "format" investments, the information that springs from them, and, in general, the broad range of tools that exists to enhance management and investment tracking.

Although we expect that numerous types of gadgets will be created in the coming years, it is possible to group them into two major categories:

1.- Quantitative. Gadgets which provide a service based on quantifiable amounts of data. Examples of these price-feeds, performance charts, artificial intelligence-based investment recommendations, or decentralised escrow services;

2.- Non-Quantitative. Gadgets which do not depend solely on data. Examples include reputation systems, graphic representations, and marketing.

Based on the immediate aim of fostering ecosystem growth, all Fluon-developed gadgets will be free. Nevertheless, gadgets will have the option of being either free or remunerated. Hence, it will be left to the discretion of future developers to decide whether to charge or not, what to charge, and how this process is coordinated.

[21] http://www.coindesk.com/vitalik-buterin-doubles-ethereum-incentive-strategy/

2.2.- Governance

The Fluon Ecosystem is built with a DAO-like governance system that operates on a series of levels. In essence, the system allows for Pool Managers as well as the Fluon to propose actions either for individual Pools or for the system as a whole. These actions will be subject to voting by Fluon and/or Pool Token Holders.

Given the preeminent position of project sponsors in the decentralised world, the application of the abovementioned DAO-based government system is accompanied by the foundational layer for system democratisation. In this way, it is only fair to be explicit with regards to the belief system that such sponsors are ruled by. In view of this, the basis for an ethical code to set the standard for conduct is in the process of being defined. This shall in the future be complemented with additional proposals from members of the ecosystem and the decentralised community.

03

THE FLUON

The Fluon is the Fluon Ecosystem token.

Fluons represent a reaction against contemporary financial inequalities and the decadence of investment markets as we known them. They are an expression of freedom and the decision to belong to an ecosystem that is destined to set the stage for a new, liquid way of doing things. Ultimately, Fluons are the cornerstone of a community that flows with no friction and unites networks which anyone can access.

Each Fluon represents:

- A percentage of the aggregation of value from all Pool Tokens contained by the Liquidity Pool at any point in time;
- The needed value transmission and Liquidity Rail within the ecosystem;
- The heart of the incentive system to foster the ecosystem's healthy growth.

04
ROADMAP

Although the development of the ecosystem's Kernel protocols will be conducted in parallel, the developmental work on the Fluon Ecosystem software will be split into different milestones. Every achievement will give rise to new challenges, the chief consequence of which is that the development of the platform will evolve in an enlivened and highly-responsive way to the objectives set in the following phases.

Due to the complexity of the solution, the roadmap outlined below should be considered as a preliminary plan. This is especially the case with respect to the main lines of development for each of the different versions. Thus, the reader should be aware that certain functionalities may modified based on the accomplishment of the objectives set forth in the future vision. The following phases of development are planned:

- Frost: The first development phase, where Genesis Pools have already been seeded. The milestones to be achieved in this phase respond to the need to have a readily developed toolset for the following phase, where Pools and assets will be deployed to mainnet. The key milestones are summarised below:

  - VAO stable version (1.0):In order to facilitate VAO adoption, stable object representation is required. As the research on different asset proxy contexts may produce the need to forward new mechanisms, the encompassing fields within this object could be modified;

  - Ecosystem Explorer(0.1): A beta explorer that provides information relative to the ecosystem. Examples of this include a VAO (or Pool) explorer or a Mining Pool explorer.

  - Tokenisation Clients: This milestone facilitates the representation of external assets into VAOs. This will be the case for the Dual Transaction Client, a specific client designed to allow for the easier interaction of actors involved in the representation of company shares.

  On the development side, the main develop ment focus will be the tokenisation of assets of differ- ent nature (i.e. internal and external). Ultimately, this will undergird future management and the creation of VAOs once the ecosystem is ready on testnet.

- Liquid: The liquid phase commences with the deployment of the first Pools and VAO's to Ethereum's mainnet. At this point in time, value from funding received in the ICO will be controlled by the ecosystem's Smart Contracts. It will be possible to find every VAO and Pool via the beta version of the ecosystem explorer, and meanwhile, the development of the cryptoeconomical system component (namely, the Liquidity Pool) will begin.

- Gas: The gas phase will commence when the Liquidity Pool is deployed to the mainnet. From there on, two more cryptoeconomical milestones should be reached:

- Implementation of the Pool's incentives, feeding the ecosystem's Mining Pool;

- Implementation of the first ecosystem Mining Pool rewards.

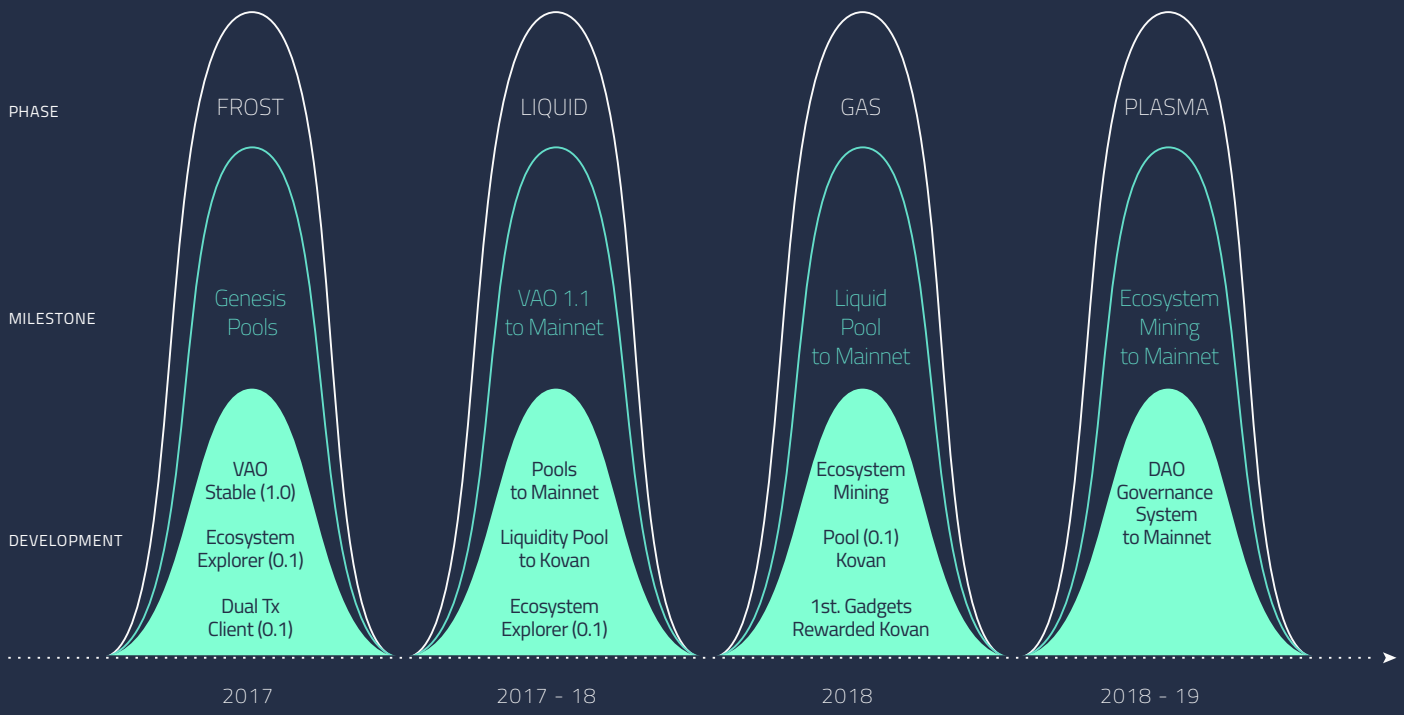
The development work for this phase will focus on the creation of DAOs for Pool management and the entire ecosystem, combined with the establishment of reward mechanisms to incentivise gadgets.

- Plasma: The final phase, plasma, will fulfil our vision of having an ecosystem where assets of any nature can be tokenised and managed in a decentralised manner. At this point, the following milestones will have been reached:

-A fully operational DAO Governance System;

- Scalability;

- A totally liquid ecosystem of VAO tokens, providing every user the ability to automatically exchange value.



FLUON
ECOSYSTEM
ROADMAP

05
ICO

06
GENESIS POOLS

07

FUTURE VISION

We foresee a future in which assets, regarded today as untokenisable, will become tokenised and, resultantly, flow freely in a highly-efficient and decentralised hub: the FLUON ECOSYSTEM. A future filled with scores of different tokens – perhaps even millions – will bring a multiplicity of investment and capital deployment options which are unimaginable in the contemporary economic framework. Ultimately, this will underpin the unfathomable redefinition of the financial sector in general and, in particular, asset management.

The FLUON ECOSYSTEM, which seeks to facilitate the conversion and flow of investment options from static positions in the hands of the few to fluid ones in the hands of the many, is nothing more than the natural derivation of a globally progressive and decentralised world.

Entrepreneurs raising funds for their projects; individual talents managing their own or third-party investments; institutions catering to the needs of their clients and potential investors; or freelance professionals rendering their services in a fluid, cost-less, and automatised world; this is how the FLUON ECOSYSTEM aims to design the future of assets and, in this way, drive the democratisation of finance.

THE REVOLUTION WON'T BE TELEVISED, IT WILL BE TOKENIZED!

References

Tether.
"Tether: Fiat currencies on the Bitcoin blockchain".
Web. 23.Apr.2017

Anthony C. Eufemio, Kay C. Chng, Shaun Djie.
"Digix's Whitepaper: The Gold Standard in CryptoAssets".
Web. 22 Apr. 2017.

Ethereum.
"Ethereum/btcrelay." GitHub. 06 Sept. 2016.
Web. 11 May 2017.

ConsenSys.
"ConsenSys/Project-Alchemy." GitHub. 11 Jan. 2017.
Web. 11 May 2017.

Aranda, Danny, Miguel Vias, and Shanna Leonard.
"Welcome to Ripple." Ripple.
Web. 22 Apr. 2017.

"Colored Coins White Paper - Digital Assets." Google Docs. Google.
Web. 22 Apr. 2017.

Ethereum.
"BLAKE2b `F` Compression Function Precompile · Issue #152 Ethereum/EIPs." GitHub.
Web. 22 Apr. 2017.

Ethereum.
"ERC: Token Standard · Issue #20 · Ethereum/EIPs." GitHub.
Web. 22 Apr. 2017.

Ethereum.
"Ethereum/wiki." GitHub.
Web. 22 Apr. 2017.

"Graphene Technical Documentation." Graphene Documentation.
Web. 22 Apr. 2017.

Sources of Inspiration

Our effort is meaningless without suitable recognition afforded to those brilliant minds whose works have enlightened us over the years. Inspiring our thoughts, whether directly related to the blockchain or not, we truly stand on the shoulders of giants: Satoshi Nakamoto, Peter Thiel, Ray Kurzweil, Marshall McLuhan, Nick Szabo, Neal Stephenson, Stephen Hawkings, Steve Jobs, Bill Gates, David Packard and many more.

Contact

Twitter: *https://twitter.com/FluonEcosystem*
Telegram: *@fluon*
Email: *info@fluonecosystem.org*
Website: *http://fluonecosystem.org*
Github: *https://github.com/Fluon*
Medium: *https://medium.com/@Fluon*