Aliquo: The Decentralized Reserve Asset Protocol

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Abstract. We present a community-governed protocol dedicated to creating, issuing, and maintaining a suite of decentralized reserve assets built on top of ERC-721. Our approach proposes a flywheel mechanism that makes the protocol collect the royalties over secondary sales of the NFTs to become accrued as collateralized value for the non-fungible tokens themselves. The earnings captured are allocated to a protocol reserve, which is divided into vaults, where each vault accrues the royalties earnings from the protocol-native ERC-721 token it represents. In its turn, each vault of the protocol reserve is fractionalized in a fixed number of stakes with a theoretical ratio of 1:1 between the stakes and the supply cap of the token that each vault represents, on which the token supply cap is the coefficient of the number of stakes, and each stake collateralizes 1:1 the backed floor price of each NFT.

1 Introduction

From PFPs to Generative Art, NFTs adoption has seen exponential growth during the rampant frenzy generated in 2021, bringing a massive influx of new retail interest. However, it still represents a thin layer of how deeply the fundamentals of NFTs technology can be explored and leveraged.

In its turn, rather than being designed as a blockchain-based digital collectible, artifact, or artwork, Financial NFTs are designed to carry some underlying financial utility or application, instead of having the visual output and traits rarity as their main product. The Financial NFTs can include everything: from bonds and security-based swaps to baskets of tokens.

Addressing the potential of leveraging the fundamentals of ERC-721 tokens' technology as a key pillar, we're introducing Aliquo, a decentralized reserve asset protocol on the Ethereum blockchain. Community-governed, the mission of Aliquo is to create, issue, and maintain the consistency of a suite of decentralized reserve assets: *AQ1* and *Asset*.

Through *AQ1* and *Asset*, Aliquo comprises existing mechanisms widely adopted by the crypto market (e.g., royalties over secondary sales, token-gated community, decentralized organization, multi-signature wallet) to present ERC-721 tokens based on the *Aliquo Standard*: a blueprint that draws a token model design composed of underlying financial features for NFTs — which was first introduced by *AQ1*.

In its turn, the underlying financial features for NFTs presented by the *Aliquo Standard* include *Royalties as Liquidity (RaL)*, *Reserve-Backed*, *Proof of Value (PoV)*, *Protocol Ensured Value (PEV)*, *Auto-Compound*, *Non-Inflationary*, and *Free-Floating*.

2 Aliquo Protocol V2

Aliquo is a community-governed protocol on the Ethereum blockchain dedicated to creating, issuing, and maintaining a suite of decentralized reserve assets. Offering equal access to everyone, Aliquo aims to unfold the potential of ERC-721 tokens as a blockchain-based infrastructure to build financial public goods.

Aliquo has a framework made of four pillars:

- **AQ1** are 1,000 NFTs collateralized 1:1 with a 0,1% stake in the AQ1 Vault. Fueled by a flywheel mechanism, Aliquo collects the earnings from royalties over secondary sales of AQ1 at the AQ1 Vault to accrue as backed value for AQ1 itself. AQ1 holders constitute Aliquo DAO, giving them the right to issue and vote on governance proposals, changes, and amendments regarding the Aliquo Protocol.
- **Asset** are 10,000 NFTs collateralized 1:1 with a 0,01% stake in the Asset Vault. Following the *Aliquo Standard* — which was first introduced and embodied through AQ1 —, Asset collects the earnings from royalties over secondary sales at Asset Vault to accrue as backed value for the token itself; a royalty-fueled flywheel mechanism.
- **Aliquo DAO** is the decentralized organization of AQ1 token-holders responsible for the governance of Aliquo.
- **Aliquo Treasury** is the protocol reserve that accrues the royalties over secondary sales of the protocol-native tokens. Aliquo Treasury is divided into two separate vaults: AQ1 Vault and Asset Vault, on which each vault collects and accrues the earnings from secondary sales of the protocol-native token it represents. Each vault of the Aliquo Treasury is fractionalized in a fixed number of stakes with a theoretical ratio of 1:1 between the stakes and the supply cap of the token that each vault represents, on which the token supply cap is the coefficient of the number of stakes, and each stake collateralizes 1:1 the floor price of each NFT.

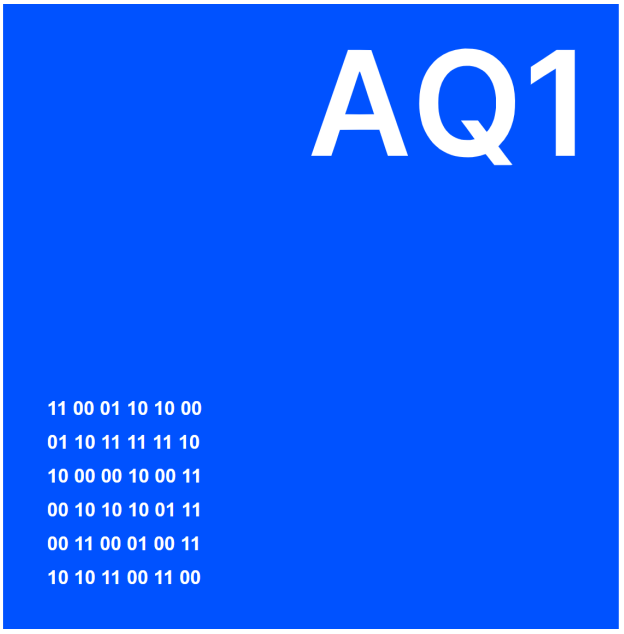
3 AQ1

AQ1 is an ERC-721 token collateralized 1:1 with a 0,1% stake in the AQ1 Vault, fully backed by ether; with a hard cap supply of 1,000 NFTs.

The Aliquo approach introduces a flywheel mechanism that makes the protocol collect the earnings from royalties over secondary sales of AQ1, which are allocated to the AQ1 Vault

to collateralize and back the floor price of AQ1 itself. In its turn, AQ1 Vault collateralizes the backed floor price of AQ1 with a theoretical ratio of 1:1 between the vault's assets value (100%) and the AQ1 supply cap (1,000).

Serving as the protocol's NFT blueprint, AQ1 embodies the token model design conceived by the *Aliquo Standard*, which provides underlying financial features for NFTs: *Royalties as Liquidity (RaL)*, *Reserve-Backed*, *Proof of Value (PoV)*, *Protocol Ensured Value (PEV)*, *Auto-Compound*, *Non-Inflationary*, and *Free-Floating*.



Example of AQ1

3.1 Aliquo Governance Token

AQ1 serves as Aliquo's governance token via Aliquo DAO.

In its turn, Aliquo DAO is the decentralized organization of AQ1 token-holders running Aliquo. The membership of the DAO is based on anyone holding at least one AQ1, meaning anyone having at least one AQ1 can join Aliquo DAO and contribute to shaping the future of Aliquo and AQ1 itself.

In other words, AQ1 is an ERC-721 governance token that dictates Aliquo by AQ1 token-holders issuing and voting on governance proposals via Aliquo DAO. Through

Aliquo DAO, AQ1 token-holders run the governance decisions regarding Aliquo, which may include decisions around development, economic parameters, treasury management, or anything else the community judges as necessary for the proper fulfillment of Aliquo.

4 Asset

Asset is an ERC-721 token collateralized 1:1 with a 0,01% stake in the Asset Vault, fully backed by ether; with a hard cap supply of 10,000 NFTs.

The Aliquo approach introduces a flywheel mechanism that makes the protocol collect the earnings from royalties over secondary sales of Asset, which are allocated to the Asset Vault to collateralize and back the floor price of Asset itself. In its turn, Asset Vault collateralizes the backed floor price of Asset with a theoretical ratio of 1:1 between the vault's assets value (100%) and Asset supply cap (10,000).

Mirroring AQ1, Asset adopts the token model design conceived by the *Aliquo Standard*, which provides underlying financial features for NFTs: *Royalties as Liquidity (RaL)*, *Reserve-Backed*, *Proof of Value (PoV)*, *Protocol Ensured Value (PEV)*, *Auto-Compound*, *Non-Inflationary*, and *Free-Floating*.

Example of Asset

- Note: Asset does not constitute any governance rights on the Aliquo Protocol and/or any membership over Aliquo DAO.

5 Aliquo Standard

Having AQ1 as the protocol's blueprint, *Aliquo Standard* introduces a token model design that comprises a set of underlying financial features for non-fungible tokens.

Aliquo Standard is adopted by both AQ1 and Asset.

5.1 Royalties as Liquidity (RaL)

By default, *Aliquo Standard* proposes 10% of royalties over secondary sales of ERC-721 tokens.

100% of the earnings captured by Aliquo are accrued in individual vaults that are employed to collateralize and back the value of the protocol-native token each vault represents. This means that royalties earnings over secondary sales of AQ1 are accrued at AQ1 Vault, while earnings of Asset are accrued at Asset Vault; both vaults are allocated at the Aliquo Treasury.

Through a royalty-fueled flywheel mechanism, Aliquo instantly adds the profit earned from royalties over secondary sales of the entire token supply of both AQ1 and Asset back to the principal amount of the tokens, providing a long-term, virtuous cycle of compounding the backed floor price of both Aliquo-native tokens.

With royalties over secondary sales serving as Aliquo's core stream to provide protocol-owned liquidity, *Royalties as Liquidity (RaL)* is the token feature that makes the entire token model design conceived by *Aliquo Standard* structurally viable, economically sustainable, and conceptually plausible.

5.2 Reserve-Backed

Aliquo Standard proposes to collateralize and back the floor price of NFTs employing reserves of underlying assets that are fully composed of ether and ether derivatives, which include Wrapped Ether (WETH) and Blur Pool (Blur Pool).

Each AQ1 is collateralized 1:1 by a 0,1% stake in the AQ1 Vault (100%/1,000). AQ1 Vault accrues ETH, WETH, and Blur Pool from royalties over secondary sales of AQ1, which are fully employed to collateralize the backed floor price of AQ1 itself.

In its turn, each Asset is collateralized 1:1 by a 0,01% stake in the Asset Vault (100%/10,000). Mirroring AQ1 Vault, Asset Vault accrues ETH, WETH, and Blur Pool from royalties over secondary sales of Asset, which are fully employed to collateralize the backed floor price of Asset itself.

Aliquo Treasury, the protocol reserve to which the earnings from royalties over secondary sales of both AQ1 and Asset are allocated, is separated into two individual vaults (i.e., reserves). Each vault is fractionalized with a theoretical ratio of 1:1 between the vault's assets value (100%) and the NFT supply cap (AQ1 = 1,000/Asset = 10,000) that each vault represents.

In the end, in addition to providing intrinsic, on-chain proven value for NFTs, *Reserve-Backed* provides — as a token feature — a predictable, tangible, and palpable unit of account for ERC-721 tokens:

- AQ1 - "*Collateralized 1:1 with a 0,1% stake in the AQ1 Vault*"
- Asset - "*Collateralized 1:1 with a 0,01% stake in the Asset Vault*"
    - Note: Both AQ1 and Asset — as a protocol standard — must be always measured in ether (ETH).

5.3 Proof of Value (PoV)

Proof of Value (PoV) is the method to audit the backed floor price of both AQ1 and Asset. It works as a due diligence process where anyone can verify each vault's assets value that is collateralizing the backed floor price of each protocol-native token in the root, tracking it on block explorers.

Through an on-chain verification of the total assets that each vault holds, anyone can calculate and attest the 0,1% or 0,01% stake collateralizing 1:1 the backed floor price of AQ1 and Asset, respectively.

5.3.1 AQ1 Proof of Value

$$AQ1_{PoV} = \frac{AQ1_{VAV}}{AQ1_{SC}}$$

- $AQ1_{PoV}$ denotes *AQ1 Proof of Value*, $AQ1_{VAV}$ denotes *AQ1 Vault Assets Value*, and $AQ1_{SC}$ denotes *AQ1 Supply Cap* (1,000).

5.3.2 Asset Proof of Value

$$Asset_{PoV} = \frac{Asset_{VAV}}{Asset_{SC}}$$

- $Asset_{PoV}$ denotes *Asset Proof of Value*, $Asset_{VAV}$ denotes *Asset Vault Assets Value*, and $Asset_{SC}$ denotes *Asset Supply Cap* (10,000).

5.3.3 AQ1 Vault Assets Value

$$AQ1_{VAV} = a_1 + a_2 + a_3$$

- $AQ1_{VAV}$ denotes *AQ1 Vault Assets Value*, and a_1, a_2, and a_3, denote individually the value (measured in ETH) of the allocation of each of the three underlying assets held in the AQ1 Vault ($a_1 = ETH$, $a_2 = WETH$, and $a_3 = BlurPool$).

5.3.4 Asset Vault Assets Value

$$Asset_{VAV} = a_1 + a_2 + a_3$$

- $Asset_{VAV}$ denotes *Asset Vault Assets Value*, and a_1, a_2, and a_3, denote individually the value (measured in ETH) of the allocation of each of the three underlying assets held by the Asset Vault ($a_1 = ETH$, $a_2 = WETH$, and $a_3 = BlurPool$).

5.4 Non-Inflationary

Both AQ1 and Asset are non-inflationary, having a hard cap supply of 1,000 and 10,000 NFTs, respectively. This means after the entire token supply of AQ1 and Asset is minted, the smart contract of both perpetual shutdown the token emission.

Immutable, the supply cap of each Aliquo-native token is embedded in their smart contract code, being publicly verifiable and attested by anyone.

5.5 Protocol Ensured Value (PEV)

100% of the holdings of both AQ1 Vault and Asset Vault are employed to collateralize the backed floor price of AQ1 and Asset, respectively.

Assuming the fact that Aliquo does not sell funds from the Aliquo Treasury's balance sheet and there's no new token issuance after the 1,000 AQ1 and 10,000 Asset become minted, the protocol ensures that the backed floor price of AQ1 is always collateralized 1:1 by a 0,1% stake in the AQ1 Vault (1,000/100%), not falling below; while, in its turn, the backed floor price of Asset is always collateralized 1:1 by a 0,01% stake in the Asset Vault (10,000/100%), not falling below.

As a protocol standard, both AQ1 and Asset must be always measured in ether (ETH). From that, it's correct to assume that the backed floor price of both AQ1 and Asset does not fall below its current ether value (i.e., collateralization). For example, if each 0,1% stake in the AQ1 Vault backing 1:1 the floor price of each AQ1 currently equals 0.09 ETH, it's guaranteed that such amount of ether is the current *Protocol Ensured Value (PEV)* of each AQ1, not falling below. The same is applied to Asset: if each 0,01% stake in the Asset Vault backing 1:1 the floor price of each Asset currently equals 0.04 ETH, it's guaranteed that such amount of ether is the current *Protocol Ensured Value (PEV)* of each Asset, not falling below.

Such sums of ether collateralizing 1:1 the backed floor price of each AQ1 and Asset stay fully stable since Aliquo does not market sell the Aliquo Treasury's balance sheet (i.e., AQ1 Vault and Asset Vault). Thus, *Protocol Ensured Value (PEV)*, as a token feature, provides ERC-721 tokens the capability to maintain (retain) or increase (compound) their backed floor price.

5.5.1 AQ1 Protocol Ensured Value

$$AQ1_{PEV} = \frac{a_1 + a_2 + a_3}{AQ1_{SC}}$$

- *Protocol Ensured Value* of each AQ1 can be verified by dividing the total amount of ETH held at the AQ1 Vault (unifying ETH, and WETH and Blur Pool as ETH-only), and dividing by *AQ1 Supply Cap* (1,000).

- This means PEV denotes *Protocol Ensured Value*, a_1, a_2, and a_3 denote individually the quantity of each of the three underlying assets held at the AQ1 Vault, and $AQ1_{SC}$ denotes *AQ1 Supply Cap* (1,000).
  - Note: $a_1 = ETH$, $a_2 = WETH$, and $a_3 = BlurPool$.

5.5.2 Asset Protocol Ensured Value

$$Asset_{PEV} = \frac{a_1 + a_2 + a_3}{Asset_{SC}}$$

- *Protocol Ensured Value* of each Asset can be verified by dividing the total amount of ETH held at the Asset Vault (unifying ETH, and WETH and Blur Pool as ETH-only), and dividing by *Asset Supply Cap* (10,000).
- This means PEV denotes *Protocol Ensured Value*, a_1, a_2, and a_3 denote individually the quantity of each of the three underlying assets held at the Asset Vault, and $Asset_{SC}$ denotes *Asset Supply Cap* (10,000).
  - Note: $a_1 = ETH$, $a_2 = WETH$, and $a_3 = BlurPool$.

5.6 Auto-Compound

AQ1 and Asset are auto-compound ERC-721 tokens.

The core of the auto-compound interest of Aliquo-native tokens occurs by increasing and leveraging the backed floor price of the NFTs themselves, automatically adding earnings from royalties over secondary sales of the protocol-native tokens to their backed floor price — with the resulting compounded backed floor price of each NFT becoming principal for the next cycle.

Distinct from traditional market strategies, on which compounding events takes place weekly or bi-weekly, the compounding of AQ1 and Asset occurs every time a secondary sale takes place, paired with the tokens trading activity, i.e., every secondary sale of AQ1 and Asset can be interpreted as a compounding event to the entire token supply.

Since the AQ1 Vault and Asset Vault wallet addresses are the Royalty Recipient wallet addresses of the NFTs, the royalties earnings collected from secondary sales of AQ1 and Asset are accrued at the AQ1 Vault and Asset Vault, respectively, and gauged at the AQ1 Dashboard and Asset Dashboard at the time it occurs, i.e., at the time a secondary sale of AQ1 or Asset occurs, it becomes instantly gauged by the AQ1 Dashboard or Asset

Dashboard, automatically increasing the backed floor price of AQ1 or Asset right after a trade takes place. As a result, AQ1 and Asset are autonomous crypto assets that have no external dependencies.

The 10% royalty fee earned in each secondary sale of AQ1 and Asset is equally dissolved among the entire token supply.

- e.g., if 0.01 ETH becomes collected in a single secondary sale, 0.00001 ETH becomes automatically accrued equally on each AQ1; equally
- e.g., if 0.01 ETH becomes collected in a single secondary sale, 0.000001 ETH becomes automatically accrued on each Asset; equally.

5.7 Free-Floating

Both AQ1 and Asset are free-floating ERC-721 tokens. This means each NFT is free to trade above 0,1%/0,01% of its respective vault's assets value, at a *premium*.

Aliquo does not impose any upper limits on the price ceiling of AQ1 and Asset. In other words, the exchange rate of AQ1 and Asset is allowed to float due to market forces without the intervention of Aliquo, and, on the other hand, always keeping a 0,1%/0,01% stake in the respective protocol-native vault that defines the *minimum price* of each AQ1/Asset.

5.8 On-Chain Storage

AQ1 and Asset are fully generated and stored on-chain. No third-party servers become used to store the metadata and visual output of each AQ1 and each Asset — the Ethereum blockchain is the data store.

5.8.1 NFT Visual Output

At the time of minting each AQ1 or Asset, a randomly generated string becomes engraved on each NFT visual output. Like a fingerprint, no two strings are the same, thus, no two AQ1 or Asset are the same — every NFT is 1/1.

- AQ1 Output HEX Color: `#0052ff` / Asset Output HEX Color: `#cff000`

5.8.1.1 AQ1 Output String

Each string engraved on AQ1 is unique, made of 36 binary numbers made up of 0 and 1, being divided into 6 rows composed of 6 binary numbers.

- Example of an AQ1's output binary string:

00 00 00 01 00 10
01 11 10 01 10 00
10 00 01 01 00 11
10 01 00 11 10 00
01 00 11 10 11 10
01 01 00 11 11 00

5.8.1.2 Asset Output String

Each string engraved on Asset is unique, made of 8 numbers between 0 and 9, being aligned into a single row.

- Example of an Asset's numeric string:

9 5 4 0 8 9 1 3

5.9 Royalties

By default, both AQ1 and Asset have 10% of royalties over secondary sales.

AQ1 royalties earnings are deposited directly in the AQ1 Vault. This means the royalty recipient wallet address of AQ1 is the AQ1 Vault wallet address.

Mirroring AQ1, Asset royalties earnings are deposited directly in the Asset Vault. This means the royalty recipient wallet address of Asset is the Asset Vault wallet address.

5.9.1 Royalty Fees Distribution

As a protocol standard, 100% of earnings from royalties over secondary sales of both AQ1 and Asset becomes captured by Aliquo. The earnings are fully allocated in separate vaults, as follows below:

- 100% of earnings from royalties over secondary sales of AQ1 is allocated in the AQ1 Vault.
- 100% of earnings from royalties over secondary sales of Asset is allocated in the Asset Vault.

6 Aliquo Dashboard

Aliquo Dashboard is a trusted and transparent reference point for AQ1 and Asset, serving as a key tool to guide the token holders for token management and trading.

Aliquo Dashboard is bifurcated into three individual interfaces:

- **AQ1 Dashboard**
- **Asset Dashboard**
- **Aliquo Treasury Dashboard**

Each Aliquo Dashboard's interface tracks and intersects multiple Aliquo-related on-chain analytics data, which include **AQ1 Vault Assets Value**, **AQ1 Backed Floor Price**, **AQ1 Market Floor Price**, **AQ1 Market Cap**, **AQ1 Volume**, **AQ1 Royalties**, **Asset Vault Assets Value**, **Asset Backed Floor Price**, **Asset Market Floor Price**, **Asset Market Cap**, **Asset Volume**, **Asset Royalties**, **Aliquo TVL**, and more.

7 Aliquo Flywheel

Aliquo introduces a flywheel mechanism that makes the protocol collect 100% of earnings from royalties over secondary sales of Aliquo-native NFTs, of which 100% of the earnings become employed to back the floor price of the NFTs themselves. This creates *Aliquo Flywheel* — the protocol's core mechanism and the key agent behind *Aliquo Standard*.

7.1 Strategy

1. The increased trading of AQ1/Asset leads to increased earnings from royalties over secondary sales;
2. Increased earnings from royalties over secondary sales increase the vault's balance sheet and, subsequently, increase the value of the 0,1%/0,01% stake in the vault backing the floor price of AQ1/Asset;
3. The increase of the backed floor price of AQ1/Asset generates, proportionally, leveraged earnings from royalties in each trade of AQ1/Asset on the secondary market;
4. The circle is completed and repeated in a perpetual loop.

7.1.1 Compound Interest

Through the flywheel mechanism, Aliquo adds automatically the profit earned from royalties of the entire token supply of AQ1/Asset back to the principal amount of the 1,000/10,000 NFTs; reinvesting the entire sum to accelerate the profit-earning process of all assets equally in the next cycle of compounding. Therefore, the current original principal of each AQ1/Asset (i.e., current backed floor price) represents the accrual of all the interest earned and added from the previous cycles of compounding.

Aliquo's flywheel provides a long-term, virtuous cycle of compounding the backed floor price of AQ1 and Asset: as much more AQ1/Asset becomes traded, more earnings from royalties the protocol accumulates as backed value to AQ1/Asset itself. Hereupon, the key point of compounding the floor price of AQ1/Asset is that as much more the backed floor price increases, it proportionally leverages how much 10% from royalties equals in each secondary sale of AQ1/Asset; then, reflecting on the posterior protocol revenue and the next cycle of compounding.

It's correct to assume that each secondary sale of AQ1/Asset affects the entire token supply, meaning that the interest earned from royalties in each secondary sale is diluted among the entire token supply of AQ1/Asset (interest earned per secondary sale/1,000 or 10,000), not accruing individually the sum earned to the traded token. In other words, one secondary sale of AQ1/Asset earns interest to the entire token supply.

- Note: Earnings collected from royalties over secondary sales of AQ1 do not blend up with funds collected from Asset, and vice versa. This means funds from AQ1 Vault do not blend up with funds from Asset Vault.

7.2 Mechanism

Aliquo's flywheel works as a structurally viable and economically sustainable mechanism that makes AQ1/Asset accrue their liquidity as collateralized value, providing a long-term, virtuous cycle of compounding the backed floor price of the token itself.

1. When the trading volume of AQ1/Asset increases, earnings from royalties over secondary sales increase as well;
2. When earnings from royalties over secondary sales increase, the allocation for AQ1 Vault/Asset Vault increases as well;

3. When allocation for AQ1 Vault/Asset Vault increases, the backed floor price of AQ1/Asset increases as well;
4. When the backed floor price of AQ1/Asset increases, earnings from royalties over secondary sales in each secondary sale of AQ1/Asset proportionally increase as well.

8 Equations

8.1 AQ1 Backed Floor Price

$$AQ1_{backed} = \frac{AQ1_{VAV}}{AQ1_{SC}}$$

- $AQ1_{backed}$ equals $AQ1_{VAV}$ divided by $AQ1_{SC}$, where $AQ1_{backed}$ denotes *AQ1 Backed Floor Price*, $AQ1_{VAV}$ denotes *AQ1 Vault Assets Value*, and $AQ1_{SC}$ denotes *AQ1 Supply Cap* (1,000). This means *AQ1 Backed Floor Price* is always collateralized 1:1 by a 0,1% stake in the AQ1 Vault (100%/1,000).
  - **Note**: It's aimed that *AQ1 Backed Floor Price* will be respected as the *minimum price* of AQ1 in the secondary market because token holders, being reasonably rational and self-interested agents, will always look to maximize their profits, as occurs with managing any other asset.

8.2 AQ1 Market Floor Price

$$AQ1_{market} = \frac{AQ1_{VAV}}{AQ1_{SC}} + AQ1_{P}$$

- $AQ1_{market}$ equals $AQ1_{VAV}$ divided by $AQ1_{SC}$ plus P, where $AQ1_{market}$ denotes *AQ1 Market Floor Price*, $AQ1_{VAV}$ denotes *AQ1 Vault Assets Value*, $AQ1_{SC}$ denotes *AQ1 Supply Cap* (1,000), and $AQ1_{P}$ denotes *AQ1 Premium*.
  - **Note:** AQ1 is free-floating. Aliquo does not impose any upper limits on the price ceiling of AQ1, meaning that AQ1 can always trade above its 0,1% stake in the AQ1 Vault, at a *premium*. *AQ1 Market Floor Price* is the floor price of AQ1 on marketplaces (OpenSea/Blur), which is dictated by market forces.

8.2.1 AQ1 Premium

$$AQ1_P = AQ1_{market} - AQ1_{backed}$$

- *AQ1 Premium* equals the additional value of *AQ1 Market Floor Price* that exceeds *AQ1 Backed Floor Price.*
- e.g., If $AQ1_{market}$ equals 0.1 ETH and $AQ1_{backed}$ equals 0.08 ETH, P equals 0.02 ETH.

8.3 Asset Backed Floor Price

$$Asset_{backed} = \frac{Asset_{VAV}}{Asset_{SC}}$$

- $Asset_{backed}$ equals $Asset_{VAV}$ divided by $Asset_{SC}$, where $Asset_{backed}$ denotes Asset *Backed Floor Price*, $Asset_{VAV}$ denotes Asset *Vault Assets Value*, and $Asset_{SC}$ denotes *Asset Supply Cap* (10,000). This means *Asset Backed Floor Price* is always collateralized 1:1 by a 0,01% stake in the Asset Vault (100%/10,000).
  - **Note**: It's aimed that *Asset Backed Floor Price* will be respected as the *minimum price* of Asset in the secondary market because token holders, being reasonably rational and self-interested agents, will always look to maximize their profits, as occurs with managing any other asset.

8.4 Asset Market Floor Price

$$Asset_{market} = \frac{Asset_{VAV}}{Asset_{SC}} + Asset_P$$

- $Asset_{market}$ equals $Asset_{VAV}$ divided by $Asset_{SC}$ plus P, where $Asset_{market}$ denotes *Asset Market Floor Price*, $Asset_{VAV}$ denotes *Asset Vault Assets Value*, $Asset_{SC}$ denotes *Asset Supply Cap* (10,000), and $Asset_P$ denotes *premium*.

- **Note:** Asset is free-floating. The Aliquo Protocol does not impose any upper limits on the price ceiling of Asset, meaning that Asset can always trade above its 0,01% stake in the Asset Vault, at a *premium*. *Asset Market Floor Price* is the floor price of Asset on marketplaces (OpenSea/Blur), which is dictated by market forces.

8.4.1 Asset Premium

$$Asset_P = Asset_{market} - Asset_{backed}$$

- *Premium* equals the additional value of *Asset Market Floor Price* that exceeds *Asset Backed Floor Price.*
- e.g., If $Asset_{market}$ equals 0.07 ETH and $Asset_{backed}$ equals 0.06 ETH, $Asset_P$ equals 0.01 ETH.

9 Aliquo Tokenomics

9.1 AQ1 Tokenomics

Token Symbol	AQ1
Blockchain	Ethereum
Token Standard	ERC-721
Total Supply	1,000
Output Storage	On-Chain
Output MIME Type	SVG
Governance Token	Yes
Royalty Fee	10%
Mint	1 per *tx*

9.2 Asset Tokenomics

Token Symbol	ASSET
Blockchain	Ethereum
Token Standard	ERC-721
Total Supply	10,000
Output Storage	On-Chain
Output MIME Type	SVG
Governance Token	No
Royalty Fee	10%
Mint	1 per *tx*

9.3 Token Distribution

The launch of both AQ1 and Asset follows the same strategy of distribution, being defined as a fair public launch, which empowers and leverages the Aliquo protocol decentralization. Through a fair public launch, the entire token supply of AQ1 (1,000) and Asset (10,000) are offered via public mint, in two single events.

There is no founder or development team, VC, or early investor pre-allocation program to privately claim a portion of the total supply of AQ1 or Asset before the release for sale to the public. Everyone, from everywhere, is allowed to mint AQ1 and Asset with equal opportunity.

10 Aliquo DAO

Aliquo DAO is the decentralized organization of AQ1 token-holders governing Aliquo.

The mission of Aliquo DAO is (1) to run Aliquo; (2) to ensure the consistency of AQ1 and Asset, and (3) to promote the economic and social well-being of the community.

10.1 Decentralized Governance

Aliquo DAO is formed solely by AQ1 token-holders. Distributing Aliquo's decision-making power in favor of the community, the membership of Aliquo DAO is

based on holding 0,1% of the total supply of AQ1 (1 of 1,000 NFTs), meaning anyone having at least one AQ1 delegated to their wallet address is allowed to issue or vote on a governance action; any wallet address with at least one AQ1 can vote for or against any governance action. In other words, AQ1 is the *meta-token* of the Aliquo Protocol via Aliquo DAO.

10.2 Permissionless

Aliquo is permissionless. This means anyone holding at least one AQ1 is allowed to join Aliquo DAO and participate in shaping the protocol's future.

10.3 Governance Structure

Aliquo DAO introduces a simple structure where any DAO member can issue a governance proposal, and every DAO member can vote democratically on every decision.

Aliquo DAO is governed through off-chain voting (Snapshot), with governance actions occurring on-chain by the Multisig Members.

- **AQ1 Token-Holders:** issue and vote for changes to the protocol
- **Multisig Members:** manage and safeguard the Aliquo Treasury's vaults executing any on-chain decisions

10.4 Governance Infrastructure

The decentralized governance of Aliquo occurs via Forum and Snapshot. Discussions about governance proposals take place at the Aliquo Forum. Then, once a governance proposal is debated at large by the community, it becomes introduced on Snapshot for voting.

10.5 Aliquo Improvement Proposals (AIPs)

As a protocol, Aliquo is developed by the Aliquo Improvement Proposal process. The AIP process provides an open venue and structure for AQ1 token-holders collectively evaluating changes to Aliquo Protocol.

Any member of Aliquo DAO can write an AIP. The authors are responsible for building consensus within the community and documenting/addressing dissenting opinions about the AIP.

Aliquo Improvement Proposals (AIPs) are the way to:

- Propose new features for Aliquo Protocol and their rationale;
- Specify the implementation details of the feature;
- Collect community input on the proposal;
- Document design decisions;
- And more.

10.6 Governance Process

Voting Weight	1 AQ1 equals 1 vote
Voting Threshold	1 AQ1
Proposal Threshold	1 AQ1
Voting Delay	1 Day
Voting Period	7 Days
Quorum	501 AQ1
Timelock	5 days

- Note: What is proposed in this paper must be interpreted as an initial protocol standard. Aliquo DAO can propose to change the parameters of governance (voting delay, voting period, timelock), and make adjustments that the decentralized organization sees best for the governance of the protocol.

11 Aliquo Treasury

Aliquo Treasury is the protocol reserve backing the value of AQ1 and Asset, separated into two vaults: AQ1 Vault and Asset Vault.

Each Aliquo Treasury's vault captures and accrues the earnings from royalties of the protocol-native ERC-721 it represents. It means that 100% of royalties earnings over secondary sales of AQ1 are collected and accumulated at AQ1 Vault. The same mechanism is applied to Asset: 100% of royalties earnings over secondary sales of Asset are collected and accumulated at Asset Vault.

Each vault is fractionalized in a fixed number of stakes with a theoretical ratio of 1:1 between the stakes and the supply cap of the token that each vault represents, on which the token supply cap is the coefficient of the number of stakes, and each stake collateralizes 1:1 the backed floor price of each NFT. This means while AQ1 Vault is fractionalized in 1,000 stakes, Asset Vault becomes fractionalized in 10,000 stakes — reflecting the supply cap of each protocol-native token.

11.1 Aliquo Treasury Vaults

11.1.1 AQ1 Vault

AQ1 Vault captures and accrues ETH, WETH, and Blur Pool from royalties over secondary sales of AQ1.

AQ1 Vault wallet address is the AQ1 Royalty Recipient wallet address. This makes it possible for AQ1 to exist as a fully autonomous crypto asset, having no external dependencies.

11.1.2 Asset Vault

Asset Vault captures and accrues ETH, WETH, and Blur Pool from royalties over secondary sales of Asset.

Mirroring AQ1 Vault, Asset Vault wallet address is the Asset Royalty Recipient wallet address. This makes it possible for Asset to exist as a fully autonomous crypto asset, having no external dependencies.

11.3 Treasury Management

Both AQ1 Vault and Asset Vault are fully autonomous, requiring no management, i.e., AQ1 Vault and Asset Vault have no external dependencies.

11.4 Proof of Reserve (PoR)

Proof of Reserve (PoR) is the method to audit and attest the AQ1 Vault's assets value and Asset Vault's assets value.

Mirroring *Proof of Value (PoV)*, *Proof of Reserve (PoR)* works as a due diligence where anyone can verify both AQ1 Vault's assets value and Asset Vault's assets value in the root, tracking on block explorers the wallet addresses that captures and holds the funds.

It's correct to assume that while *Proof of Value (PoV)* is a token feature of AQ1 and Asset, *Proof of Reserve (PoR)* is a protocol feature of Aliquo, with both *PoV* and *PoR* having the same finality: transparency, value tangibility, and trust for stakeholders.

11.4.1 AQ1 Vault Proof of Reserve

$$AQ1Vault_{PoR} = a_1 + a_2 + a_3$$

- $AQ1Vault_{PoR}$ denotes *AQ1 Vault Proof of Reserve*, and a_1, a_2, and a_3 denote individually the value of the allocation of each of the four underlying assets held in each Aliquo Treasury's vault ($a_1 = ETH$, $a_2 = WETH$, and $a_3 = BlurPool$). This means *AQ1 Vault Proof of Reserve* is attested by summing the value, measured in ETH, of the allocation of each underlying asset held in the vault.

11.4.2 Asset Vault Proof of Reserve

$$AssetVault_{PoR} = a_1 + a_2 + a_3$$

- $AssetVault_{PoR}$ denotes *Asset Vault Proof of Reserve*, and a_1, a_2, and a_3 denote individually the value of the allocation of each of the four underlying assets held in each Aliquo Treasury's vault ($a_1 = ETH$, $a_2 = WETH$, and $a_3 = BlurPool$). This means *Asset Vault Proof of Reserve* is attested by summing the value, measured in ETH, of the allocation of each underlying asset held in the vault.

11.4.3 Aliquo Treasury Proof of Reserve

$$AT_{PoR} = AQ1_{VAV} + Asset_{VAV}$$

- AT_{PoR} denotes *Aliquo Treasury Proof of Reserve*, while $AQ1_{VAV}$ denotes *AQ1 Vault Assets Value* and $Asset_{VAV}$ denotes *Asset Vault Assets Value.* This means *Aliquo Treasury Proof of Reserve* is attested by summing the total value, measured in ETH, of each Aliquo Treasury's vault.

11.5 Protocol-Owned Liquidity (POL)

Aliquo owns 100% of the liquidity held in both AQ1 Vault and Asset Vault. 100% of the liquidity held at the AQ1 Vault comes from royalties over secondary sales of AQ1, and 100% of the liquidity held at the Asset Vault comes from royalties over secondary sales of Asset.

11.6 Aliquo Total Value Locked (TVL)

Aliquo Total Value Locked can be measured by defining Aliquo Treasury's assets value.

In other words, Aliquo TVL can be measured by summing AQ1 Vault's assets value and Asset Vault's assets value.

$$Aliquo_{TVL} = AQ1_{VAV} + Asset_{VAV}$$

- $Aliquo_{TVL}$ denotes *Aliquo Total Value Locked*, while $AQ1_{VAV}$ denotes *AQ1 Vault Assets Value* and $Asset_{VAV}$ denotes *Asset Vault Assets Value.*
  - Note: *Aliquo Total Value Locked* mirrors the equation of *Aliquo Treasury Proof of Reserve*.

11.7 Treasury Composition

Three crypto-assets are accrued at each Aliquo Treasury's vault — as a protocol standard —, with both vaults having the same asset composition: ETH, WETH, and Blur Pool. The three crypto-assets come from royalties of both AQ1 and Asset.

11.8 Safety of Funds

Aliquo DAO is responsible for being the *protocol watchdog organization* of the Aliquo Protocol, safeguarding and tracking Aliquo Treasury's activity, and ensuring the integrity of funds. To ensure the safety of funds, both AQ1 Vault and Asset Vault are managed via multi-signature authentication by Multisig Members.

11.8.1 Multisig Members

The multi-signature authentication of both AQ1 Vault and Asset Vault is implemented through two stages:

- **Stage 1**: The multi-signature authentication of both AQ1 Vault and Asset Vault is formed by four members, all from Aliquo's core team. In Stage 1, both AQ1 Vault and Asset Vault are protected with a 4/4 multi-signature procedure, meaning for every transaction involving funds from both AQ1 Vault and Asset Vault, all four Multisig Members need to sign the transaction.
- **Stage 2**: The multi-signature authentication of both AQ1 Vault and Asset Vault is formed by eight members: four signers are from Aliquo's core team, and four signers are from Aliquo DAO, being elected by Aliquo DAO members. In Stage 2, both AQ1 Vault and Asset Vault are protected with a 5/8 multi-signature procedure, meaning for every transaction involving funds from AQ1 Vault and Asset Vault, five Multisig Members, at least, need to sign the transaction (3 multisig signers from Aliquo's core team, and 2 multisig signers from Aliquo DAO).

12 Conclusion

Historically, people tend to hedge against inflation risks by investing or allocating capital to store of value assets that are expected to retain or increase their value.

Materializing the core utility of AQ1 and Asset, Aliquo aims that the protocol-native tokens can function as decentralized, fully ether-backed reserve assets that accrue earnings from royalties as backed value, enabling both AQ1 and Asset to retain or increase their purchasing power over time, rather than depreciate; the primary fundamental of a reserve asset.

In the end, while AQ1 is conceived as a scarce, pivotal protocol-native token for the Aliquo Protocol's architecture, Asset is conceived to function as the protocol's liquid token — an stable ERC-721-based reserve asset that can also function as a non-fractionable, decentralized medium of exchange with on-chain proven value; fueled by royalty fees.

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