Arowana Whitepaper

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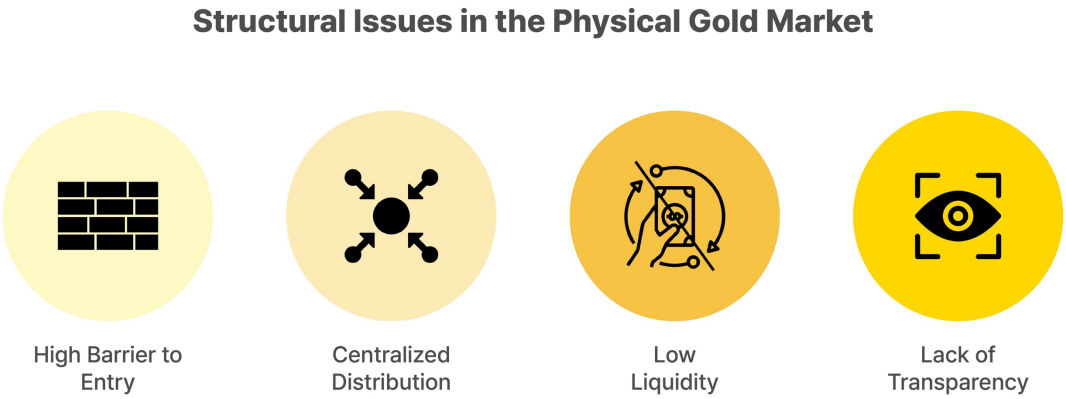
1. Project Overview

1.1. Background and Problem Recognition



Gold, a timeless store of value and a reliable safe-haven asset, has maintained its status for centuries. However, physical assets like gold still suffer from high barriers to entry, centralized distribution systems, limited liquidity, and a lack of transparency. These issues have made meaningful integration with the digital financial ecosystem difficult.

Arowana aims to fundamentally address these challenges by building an on-chain asset finance platform where real-world assets like gold are seamlessly connected to blockchain networks. This allows anyone to digitally own, exchange, and utilize the value of gold with transparency and accessibility.

1.2. AGT: A Real-World Asset-Backed Digital Token

The Arowana platform introduces the Arowana Gold Token (AGT), which is backed 1:1 with physical gold. Each AGT is pegged to 1 gram of gold and stored securely at Hancom Gold Exchange.

AGT is not merely a tokenized representation of gold. It is transparently issued via smart contracts and offers the following functionalities:

- Mint: Issue AGT by depositing fiat or stablecoins.
- Redeem: Request physical gold delivery by burning AGT.
- Swap: Exchange AGT with other on-chain assets.
- Stake: Earn rewards through the platform's staking system.

AGT's value is synced in real-time with spot gold prices via Chainlink oracles, and its physical backing is verified on-chain through a Proof-of-Reserve (PoR) mechanism. This structure ensures transparency, real-time price reflection, and accessibility that traditional systems cannot offer.

1.3. ARW: The Utility Token of the Arowana Ecosystem

If AGT forms the foundation of trust through its real-world asset linkage, ARW (Arowana Token) serves as the driving force behind platform participation, governance, and incentive mechanisms.

ARW plays the following roles:

- Staking Incentives: Users who stake AGT or ARW receive ARW rewards, promoting long-term engagement and liquidity.
- Liquidity and Trading Incentives: As Arowana expands toward an on-chain commodity exchange layer, ARW will be used to reward liquidity providers and offer fee discounts to active participants.
- Governance Participation: ARW will be used for voting on platform decisions (e.g., staking rates, listing assets, fee policies), promoting decentralized decision-making.
- Ecosystem Liquidity Hub: ARW is central to various platform activities (swaps, DAO voting, rewards), connecting all economic flows in the ecosystem.

Rather than serving as a simple reward token, ARW is designed as a core enabler of decentralized finance linked to real-world assets. With future expansion into commodity index products and on-chain exchange infrastructure, ARW will evolve into a utility token with growing real demand.

1.4. Bridging Real Assets with Decentralized Finance

Arowana's ultimate goal is not just to issue gold tokens. It aims to build an infrastructure bridge between physical assets and digital finance, allowing users to engage with gold as easily as digital tokens:

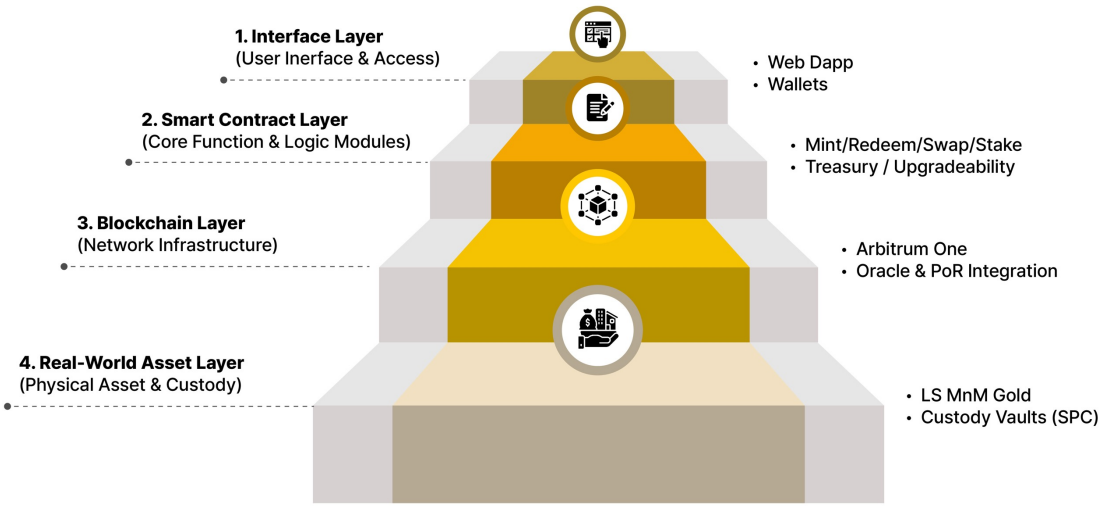
- Direct user interaction without centralized intermediaries
- Security of physical backing with the transparency of blockchain
- Separation of roles between AGT and ARW for trust and utility balance
- Built-in expandability toward other commodities (silver, copper, oil, etc.)

Arowana proposes an innovative framework for maximizing real asset utilization within digital finance and strives to become the standard infrastructure for on-chain commodity trading.

2. System Architecture

2.1. Overview

The Arowana platform is a decentralized infrastructure designed for the secure and scalable management of real-world assets on the blockchain. It is built with a modular system architecture that supports the issuance of gold-backed tokens (AGT), ecosystem utility tokens (ARW), and smart contract-based automation. The platform architecture is divided into four functional layers:



2.2. Real Asset & Custody Layer

Each AGT token is pegged 1:1 to 1 gram of physical gold, refined and certified under the LBMA Good Delivery standard by LS MnM. Custody is managed by Hancom Gold Exchange under a Special Purpose Company (SPC) structure that legally separates the assets from the platform entity.

- Asset Type: Gold refined by LS MnM (LBMA certified)
- Custody Location: Hancom Gold Exchange
- Legal Framework: Stored under SPC, separate from the platform
- Verification Methods:

  - Weekly off-chain audit reports
  - Real-time on-chain verification via Chainlink Proof-of-Reserve (PoR)

This layer is the foundation of trust, ensuring AGT's redeemability through a legally enforceable claim on underlying physical assets.

2.3. Blockchain Network Layer

Arowana is deployed on Arbitrum One, an Ethereum Layer 2 scaling solution offering EVM compatibility, reduced fees, and high throughput.

- Network: Arbitrum One (Ethereum Layer 2)
- Compatibility: Full support for Solidity-based smart contracts
- Performance: Up to 90% lower transaction fees compared to Ethereum
- Security: L1-rooted data integrity ensures robust protection

This layer powers key operations such as minting, redeeming, swapping, and staking.

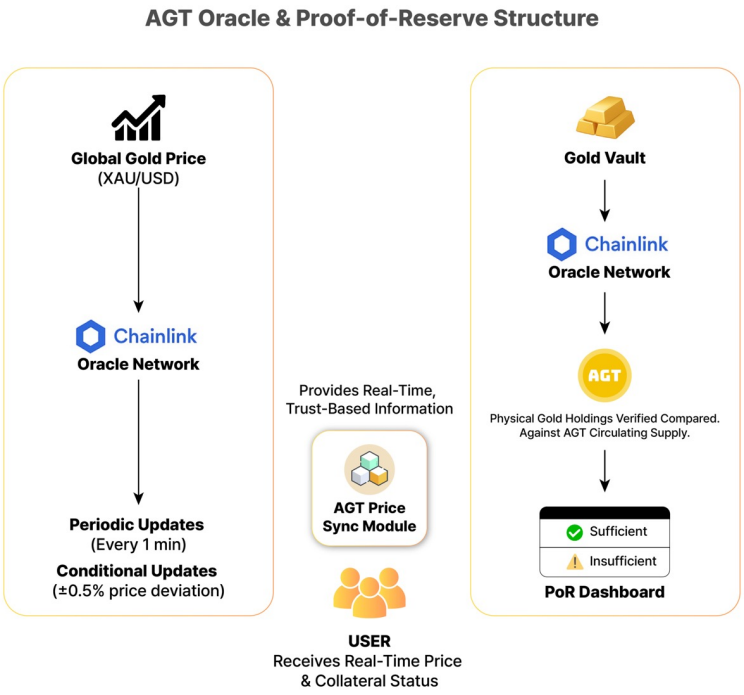
2.4. Smart Contract Function Layer

Arowana's core features are implemented via modular smart contracts, allowing secure and scalable automation of platform logic. Each module can be upgraded independently and follows industry best practices.

Module	Functionality
Mint Module	Issues AGT in exchange for stablecoins
Redeem Module	Burns AGT and triggers gold redemption
Swap Module	Facilitates token swaps (AGT, ARW, others)
Stake Module	Manages staking and rewards
Fee & Treasury Module	Manages fees and platform treasury distribution

The Redeem function is designed around legal claim fulfillment, not immediate physical delivery, balancing efficiency and regulatory safety.

2.5. Oracle System & Proof-of-Reserve



AGT's value is synchronized with global gold prices via Chainlink's XAU/USD feed. The Oracle updates every minute or upon significant deviation, ensuring high price fidelity.

- Price Sync: Based on global gold spot (XAU/USD)
- Refresh Rate: ~1 minute (or ±0.5% deviation trigger)
- PoR Mechanism: Chainlink verifies that AGT circulation matches gold reserves

This ensures transparency and real-time proof of asset backing.

2.6. User Interface & Access Layer

Users interact with the platform through a DApp interface optimized for ease of use. Wallet connectivity and simplified onboarding options are offered.

- Interface: Web-based DApp (mobile support in roadmap)
- Wallets: MetaMask, WalletConnect, Rabby, etc.
- Features: Mint, Redeem, Swap, Stake, Real-time data display
- Onboarding: Email/social login options for wallet-less users

Users maintain full control without intermediaries, bridging traditional assets with on-chain usability.

3. Asset & Token Structure

3.1. AGT (Arowana Gold Token)

AGT is the core trust-based token of the Arowana platform, backed 1:1 by physical gold. Each AGT represents 1 gram of gold, allowing users to hold, transfer, and utilize gold on-chain with transparency and flexibility.

Issuance Criteria

- Underlying Asset: Gold refined by LS MnM (LBMA Good Delivery certified)
- Backing Ratio: 1 AGT = 1g physical gold
- Custody Model: Stored at Hancom Gold Exchange, under separate SPC (Special Purpose Company)
- Minting Conditions:
  - KYC verification required for all users
  - Minting allowed only when the corresponding physical gold is secured

Settlements for minting/redeeming are conducted in stablecoins (e.g., USDC, USDT)

◆ Functional Summary

Function	Description
Mint	Issue AGT by depositing stablecoins (KYC required)
Redeem	Burn AGT and request redemption in physical gold
Swap	Exchange AGT for ARW or other on-chain assets
Stake	Lock AGT to earn ARW rewards

◆ Price Sync & Collateral Verification

- Gold prices are synced in real-time via Chainlink Oracle (XAU/USD)
- Issuance is audited through Chainlink Proof-of-Reserve (PoR)
- Weekly off-chain audits supplement on-chain verification

◆ Circulation

- AGT is minted on issuance and burned upon redemption
- Transferable externally, but redeemable only within the Arowana platform

3.2. ARW (Arowana Utility Token)

ARW powers the internal economy and governance of the Arowana platform. Unlike AGT, it is not asset-backed but functions as an incentive and utility token.

◆ Core Utilities

Role	Description
Staking Rewards	Earn ARW by staking AGT or ARW
Governance Participation	Propose/vote on key platform decisions
Ecosystem Incentives	Used for liquidity provision rewards, ecosystem campaigns

◆ Supply & Distribution

- Total Supply: 500,000,000 ARW
- Allocation: Community incentives, liquidity mining, foundation reserves, partnerships, etc.
- Emission Model: Gradual release in alignment with platform growth

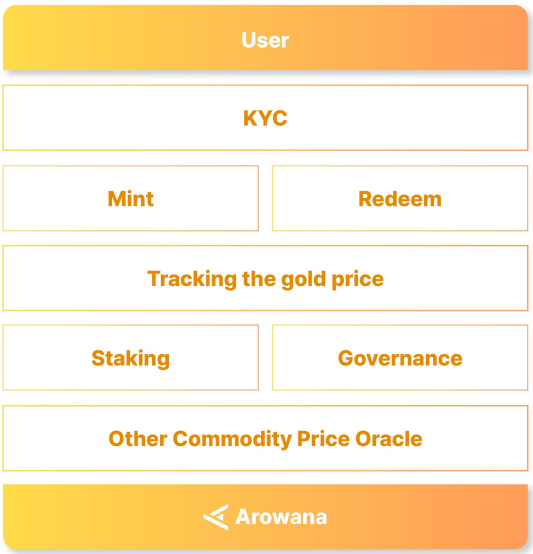
3.3. Relationship between AGT and ARW

Aspect	AGT	ARW
Asset Type	Physical gold-backed asset	Utility/incentive token
Value Basis	1g of gold per token	Market demand and platform usage
KYC	Mandatory	Optional
Functional Focus	Mint/redeem/swap physical asset	Rewards, participation, governance
Interlinking	Swappable with ARW	Same

This separation of purpose ensures that Arowana can deliver a dual-token model combining the stability of physical assets with the dynamism of decentralized finance (DeFi).

4. Core Functions & User Flow

4.1. Core Platform Functions



The Arowana platform centers around two tokens: AGT (asset-backed) and ARW (utility). Core functions are designed to enable seamless interaction between users and the platform's underlying asset infrastructure:

◆ AGT Minting

- Users who have completed KYC can deposit stablecoins (e.g., USDC, USDT) to mint AGT.
- Upon minting, AGT is issued to the user's wallet, while an equivalent amount of gold is securely held via the SPC (Special Purpose Company) structure.
- Minting fees are settled in stablecoins.

◆ AGT Redemption

Users can burn their AGT and initiate a redemption request to claim the equivalent amount of physical gold.

Redemptions are executed via smart contracts, triggering asset ownership transfer from the SPC to the user.

Physical delivery follows an off-chain process as per pre-defined procedures.

◆ Swap

- AGT can be exchanged for ARW or other supported on-chain assets.
- Swaps can be conducted through Arowana's platform interface or via aggregated routing across liquidity sources.
- Pricing is determined by oracle feeds and AMM pool data.

◆ Staking

- Users can stake AGT or ARW to earn ARW-based rewards.
- Staking durations (e.g., 7, 30, 90 days) offer different yield rates.
- This mechanism incentivizes long-term ecosystem participation and liquidity provision.

4.2. User Journey Overview

Step 1: Onboarding & Verification

- Users connect their wallet and complete KYC.
- Verified users can access minting and redemption functions.

Step 2: Minting AGT

- Users deposit stablecoins to mint AGT.
- AGT is issued to their wallet, with equivalent physical gold secured by the SPC.

Step 3: Asset Utilization

- Users can stake AGT for ARW rewards.
- Swap functionality enables asset conversion and portfolio rebalancing.
- Additional ARW staking options enhance engagement.

Step 4: Redemption or Withdrawal

- Users can burn AGT to request physical gold delivery.
- Off-chain settlement is completed via designated partners or logistics.

4.3. UX/UI Accessibility

Arowana emphasizes intuitive design to onboard users of all backgrounds:

- Wallet Integration: Compatible with MetaMask, WalletConnect, Rabby, and other EVM wallets.
- Social Login Support: Email and social logins are supported for users unfamiliar with Web3 wallets, enabling seamless account creation.
- Interface Modules:
  - Mint / Redeem
  - Swap interface
  - Staking dashboard
  - Live oracle price feed for gold

Mobile Responsiveness: Web-based interface supports mobile, with a native app in development.

5. Tech Stack & Security

5.1. Network Architecture: Built on Arbitrum

Arowana is deployed on Arbitrum One, a Layer 2 rollup solution for Ethereum. Arbitrum ensures low-cost, high-throughput transactions while preserving Ethereum-level security and EVM compatibility, making it an ideal foundation for real-world asset tokenization.

Item	Details
Base Chain	Arbitrum One (Rollup-based Layer 2)
EVM Compatibility	Full (Solidity smart contract support)
Gas Cost Savings	Up to 90% lower than Ethereum mainnet
Security	Inherits Ethereum L1 security via data anchoring

Arowana maintains a close strategic alignment with Arbitrum to ensure a stable and scalable operational backbone.

5.2. Smart Contract Architecture

The platform's smart contracts are modularized by function for ease of upgrades and security. Each functional component is independently deployed and audited based on industry best practices.

- Development Standard: OpenZeppelin libraries and audited implementation templates
- Module Examples:
  - Mint/Redeem Module – Handles AGT issuance and redemption
  - Stake Module – Processes staking and reward distribution
  - Swap Router – Facilitates liquidity-based swaps
  - Treasury Module – Collects and allocates platform fees

Upgrade Framework: Proxy pattern enables seamless updates and patching without redeployment. Initially, admin privileges are controlled through multisig governance, with plans for full community governance in the future.

5.3. Oracle System & Data Integrity

The platform leverages Chainlink oracles to maintain real-time price and reserve synchronization.

Component	Description
Price Feed	XAU/USD price data aggregated from global markets
Update Frequency	~1-minute interval with deviation-based trigger mechanism
PoR Integration	Chainlink Proof-of-Reserve verifies that AGT issuance is backed
Multi-oracle Plan	Redundancy via future integration of additional providers

This architecture ensures external data consistency, enabling users to trust both price accuracy and asset backing.

5.4. Security Practices & Audit Process

Security is embedded in every layer of Arowana's infrastructure:

- Smart Contract Audits:
  - External security firms will conduct code audits prior to mainnet deployment
  - Simulations and attack surface reviews are carried out pre-launch
- Bug Bounty Program: A white-hat focused bug bounty program will launch post-mainnet to reward vulnerability disclosures
- Custody Isolation:
  - Physical gold assets are held by a legally separate SPC entity, isolating them from platform risk
  - Weekly off-chain audits complement on-chain transparency
- Operational Permissions:
  - Core smart contracts are controlled via multisig wallets
  - Admin roles will be progressively decentralized through governance modules

These security layers combine on-chain transparency with real-world assurance to safeguard both digital and physical assets.

6. Custody & Real Asset Assurance

6.1. Trusted Infrastructure for Physical Gold

Each AGT (Arowana Gold Token) issued on the Arowana platform is backed 1:1 with physical gold, denominated in 1-gram units. This token is the core element of trust in the ecosystem, and its issuance is strictly conditional upon the prior custody of physical gold assets.

Category	Description
Asset Type	Refined gold by LS MnM (LBMA Good Delivery certified)
Storage Location	Hancom Gold Exchange
Peg Ratio	1 AGT = 1g of physical gold
Use Case	Acts as the reserve asset for AGT issuance

6.2. Legal Separation via Special Purpose Corporation (SPC)

To safeguard asset custody and ensure legal clarity, all gold reserves are held not directly by the platform, but under the legal ownership of a Special Purpose Corporation (SPC). This structure ensures user assets are shielded from any platform-level risks.

- Legal Separation: The SPC operates as an independent entity distinct from the Arowana platform.
- Ownership Structure: All gold backing AGT issuance is legally held in the name of the SPC.
- Redemption Rights: Users redeeming AGT gain claim rights to the corresponding amount of gold.

Bankruptcy Protection: Even in the event of platform termination, SPC assets remain secure and claimable by users.

6.3. Dual-Layer Verification: Off-Chain Audit + On-Chain Proof

To ensure the highest level of credibility, Arowana operates a dual-verification system that combines traditional physical auditing with blockchain-based transparency.

◆ Off-Chain Physical Audit

- Frequency: Weekly inspections
- Conducted by: Hancom Gold Exchange + third-party auditing firms
- Scope: Physical inventory count, certificate verification, storage confirmation

◆ On-Chain Proof-of-Reserve

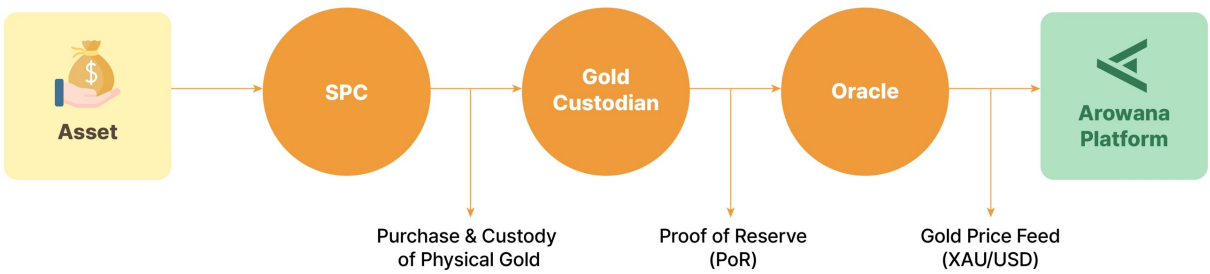
- Tool: Chainlink Proof-of-Reserve (PoR)
- Mechanism: Automated comparison between AGT supply and gold reserves
- Transparency: Verifiable by anyone on-chain
- Fail-safe: Automatic minting halt + administrator alert if discrepancies occur

6.4. Redemption & Physical Delivery Process

AGT holders can request physical gold redemption at any time through a clearly defined off-chain process:

1. AGT Burn Request
   - User initiates burn via smart contract
   - Redemption request is recorded on-chain
2. Ownership Transfer
   - Gold held by the SPC is assigned to the user based on redemption amount
3. Delivery Method Selection
   - (1) In-person pickup at designated gold exchange
   - (2) Insured shipping via certified logistics partners
4. Completion & Confirmation
   - User receives physical gold
   - Final confirmation reflected in the Arowana platform

Note: In accordance with applicable regulations, VAT (Value-Added Tax) may be imposed on gold deliveries. Additional costs such as packaging, shipping, and insurance will also be charged to the user.



7. ARW Ecosystem & Incentives

7.1. Role of ARW

ARW serves as the core utility token of the Arowana ecosystem, driving user participation, rewards, liquidity, and governance. While AGT is directly backed by physical gold, ARW facilitates all economic and community interactions within the platform.

Function	Description
Rewards	Distributed as incentives for staking and liquidity provisioning
Participation	Earned through core platform engagement (minting, redeeming, swapping)
Governance	Enables voting on platform policies and proposals
Ecosystem Circulation	Used in rewards, fees, burns, and DAO activities

7.2. Demand Drivers for ARW

ARW is designed not just as a reward token but as a multi-functional asset that encourages active engagement and long-term value creation. Key mechanisms include:

◆ Staking Reward System

- Users can stake ARW or AGT for a defined period (e.g., 7 / 30 / 90 days)
- Rewards are distributed in ARW based on staking duration and amount
- Lock-up structure helps control circulating supply and reduce sell pressure

◆ Liquidity Provision Incentives

- Users contributing to liquidity pools (e.g., AGT-USDC, ARW-USDC) receive ARW rewards
- Early-phase liquidity mining programs may include bonus incentives

◆ Activity-Based Distribution

- ARW is distributed based on actual platform activity (mint, redeem, swap)
- This approach emphasizes real usage over speculation

◆ Token Burn Mechanism

- A portion of platform fees collected in ARW is regularly burned
- This introduces deflationary pressure and supports long-term value

7.3. Governance Participation

As Arowana's primary governance token, ARW enables decentralized decision-making by allowing token holders to propose and vote on platform developments.

◆ Governance Scope

- Adjust staking rewards and incentive policies
- Propose or delist supported asset types
- Modify fee structures
- Approve partnerships and product improvements

◆ Governance Flow

- Voting rights are automatically assigned based on ARW holdings
- Off-chain voting via Snapshot; on-chain execution via smart contracts (planned)

ARW holders are not just participants but active contributors to the future of the Arowana ecosystem.

7.4. ARW Ecosystem Flow Summary

[Platform Usage] → [Incentives Distributed] → [Staking & Liquidity Provision] →

[ARW Circulates in Ecosystem] → [Burn or Governance Participation]

This cycle positions ARW as more than a reward mechanism—it becomes the driving force of a self-sustaining ecosystem. Over time, ARW will support liquidity, user alignment, and governance integrity across Arowana's physical-asset-backed Web3 infrastructure.

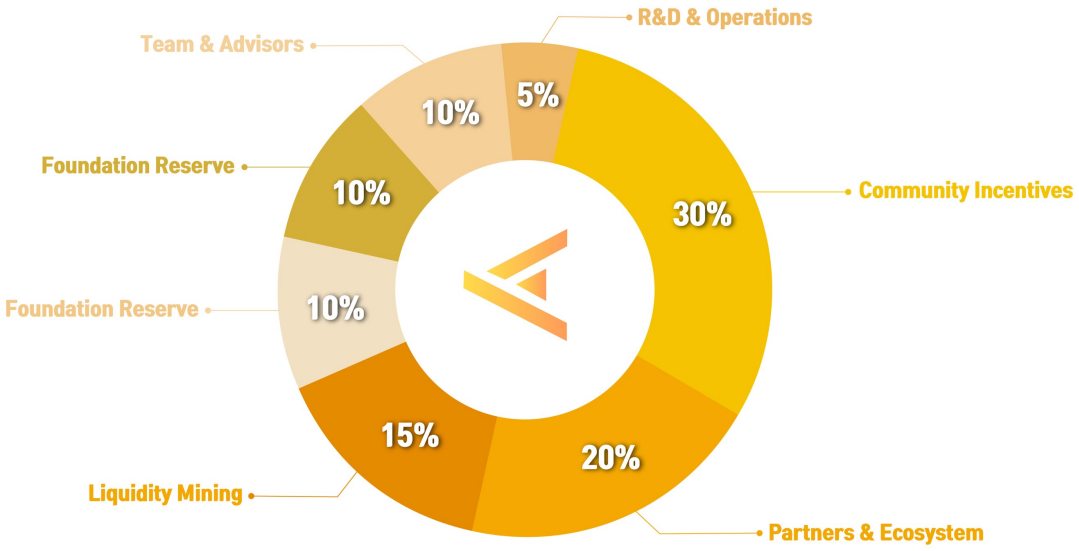
8. Tokenomics

8.1. Token Overview

Item	Description
Token Name	Arowana Token (ARW)
Network	Arbitrum One (Ethereum L2)
Total Supply	500,000,000 ARW

ARW serves as the core economic unit of the Arowana ecosystem. It powers rewards, governance, liquidity provisioning, and long-term participation, ensuring alignment across all stakeholders in the platform.

8.2. Token Distribution



Token allocations are released strategically to support growth, liquidity, user incentives, and long-term sustainability of the protocol.

8.3. Vesting Policy (For Internal Use Only)

While not disclosed in the public whitepaper, the following internal vesting plan is applied:

- Team: 24-month lock-up followed by 24-month linear vesting
- Marketing: 3-month lock-up, followed by 12-month linear vesting

Other buckets: Distributed according to internal milestone-based release schedules or partner-specific terms

8.4. Value Stabilization Mechanisms

To support long-term value and reduce volatility, ARW incorporates the following mechanisms:

Token Burn Policy

- A portion of platform fees collected in ARW will be regularly burned
- Burn volume may adjust dynamically based on platform activity

Liquidity Mining Incentives

- Early-phase LP providers (e.g., AGT-USDC, ARW-USDC) are rewarded with ARW
- Long-term liquidity commitments receive higher rewards

Staking Reward System

- Staking rewards for ARW or AGT help reduce short-term circulation
- Encourages user retention and supports price stability

Together, these strategies create a healthy token economy where demand is driven by real usage, and supply is governed by transparent and automated mechanisms.

9. Team & Partnerships

10. Roadmap & Vision

10.1. Quarterly Roadmap (2025–2026)

2025 Q1

Infrastructure & Preparation Phase

- Conduct testnet validation for AGT mint/redeem and smart contract auditing
- Finalize the custody structure (SPC-based) and integrate gold linkage
- Connect Chainlink oracles and automate Proof-of-Reserve (PoR) validation
- Finalize staking and liquidity incentive mechanisms for ARW
- Launch community onboarding and beta version of the public dashboard
- Establish early strategic partnerships and CEX listing strategy

2025 Q2

Mainnet Launch

- Official launch of AGT mint/redeem on Arbitrum mainnet
- Enable 1 AGT = 1g gold structure with real custody operations
- Real-time gold price feeds and PoR transparency via Chainlink Oracle
- Launch ARW staking and AGT-USDC liquidity pools
- Activate gold redemption UI with off-chain delivery workflows
- Start community reward and incentive distribution programs

2025 Q3-Q4

Feature Expansion

- Design index-linked commodity token models
  - Based on LP liquidity pools, not direct physical minting
  - Oracle-integrated pricing for real-time exposure to assets like oil, copper
- Deploy Trade functionality for LP-based synthetic commodities
- Expand unified dashboard (real-time yield tracker, oracle metrics)
- Pilot LP management via global DAO partnerships
- Strengthen on-chain analytics and transparent reward tracking

2026 Q1

Enhancing Accessibility

- Launch of mobile DApp, supporting gold and index-linked assets
- Official rollout of simplified wallet UX with social login support

2026 Q2

User Experience Optimization

- UI/UX upgrades centered on index-based asset products
- Internal testing of integrated custody API for on-chain/off-chain sync

2026 Q3-Q4

Expansion & System Integration

- Public release of on-chain/off-chain custody integration API
- Full launch of real-asset-backed digital asset trading for global users

10.2. Vision

Arowana envisions a future where physical assets, particularly gold, are fully accessible, verifiable, and usable on-chain. As one of the world's oldest and most trusted stores of value, gold has remained relevant across centuries—serving as a foundation for both monetary systems and personal wealth.

Through on-chain tokenization, Arowana enables:

- Seamless participation in gold markets without centralized intermediaries
- Transparent and auditable proof of reserves for physical backing
- Scalable token models for broader adoption in DeFi and Web3 ecosystems
- Expansion toward index-linked commodity finance, beyond gold

AGT acts as the bridge between real assets and on-chain finance.
ARW powers the incentives and governance to support a dynamic, user-driven economy.

In the long run, Arowana aims to become a leading on-chain infrastructure for real-world assets (RWA)—where stability, utility, and decentralization coexist.