

# 1. Introduction

## 1.1 Overview

ARENATON enters the DeFi sector with an objective to revolutionize online betting using advanced blockchain solutions. Moving away from the pitfalls of traditional betting, it offers a decentralized approach, ensuring each transaction is free from undue influence and manipulation.

ARENATON is a cutting-edge platform that integrates commission sharing for native token holders, NFT integration, and a novel stablecoin mechanism. This whitepaper presents an in-depth analysis of ARENATON's features, tokenomics, and technical implementations, emphasizing its unique contributions to the DeFi landscape.

## 1.2 Vision

The sports betting industry, despite its vast revenues, has often marginalized its core stakeholders: the fans and bettors. ARENATON aims to change this narrative by decentralizing betting, ensuring fairness, visibility, and equitability in every transaction.

ARENATON is the next evolution of online sports betting. Powered by the parimutuel betting system, tri-pool architecture, various smart contracts and the stablecoin mechanics, for the first time in the history of online betting, every stakeholder is recognized and rewarded fairly.

## 1.3 Market

The exponential growth potential of the online betting market has been drawing significant attention. Here are some noteworthy projections:

- Revenue in the Online betting market is anticipated to touch US\$95.05bn in 2023.
- An expected annual growth rate of 8.54% from 2023 to 2027 could elevate the market volume to a staggering US\$131.90bn by 2027.
- User metrics are also promising, with estimates pointing to 233.7 million users by 2027.
- User penetration, starting at 2.3% in 2023, is forecasted to grow to 2.9% by 2027.
- The average revenue per user (ARPU) is projected to be around US\$0.54k.
- Globally, the United States is poised to lead in revenue generation with an expected US\$19,140.00m in 2023.
- Canada, though smaller in absolute numbers, will boast the highest user penetration in the Online betting market at 46.8%.

The expansive growth of the online betting market indicates a strong demand and presents significant opportunities for industry participants.

## 2. Online Betting Reimagined

### 2.1 Traditional Bookmaker System

The traditional bookmaking model, often criticized for its lack of transparency and centralized control, relies on intricate practices to maintain its edge over the bettor.

*Crafting the Odds:* Bookmakers use a blend of human intuition and algorithms to set odds based on metrics such as statistics, recent performances, and historical data. These odds incorporate a margin to guarantee profitability.

*Betting Dynamics:* In this system, bettors are in a direct contest with the bookmaker—either they win and the bookmaker pays, or they lose, and their stake becomes the bookmaker's gain.

*Dynamic Odds:* Odds are frequently adjusted to maintain the bookmaker's advantage.

*Profit Artistry:* Bookmakers manipulate odds to ensure they always have a profit, even after payouts.

### 2.2 Parimutuel Betting System

A sharp contrast to the conventional bookmaker setup, the parimutuel betting system emphasizes communal involvement and fairness, fundamentally reshaping how bets are placed and rewarded.

*The Common Pool:* Instead of predetermined odds, bets converge into a single collective pool. The odds here are fluid, constantly shaped by the collective weight and volume of all placed stakes.

*Betting Landscape:* The dynamics shift from player versus house to player versus player. In this model, the system simply facilitates, emphasizing fairness and non-interference.

*House Take:* A predetermined fraction is extracted from the collective pool as the house's share, ensuring total transparency. No hidden margins exist.

*Reward Distribution:* Once an event concludes, the rewards are distributed among the successful bettors. This distribution takes into account the final odds and the size of each individual's stake.

### 2.3 ARENATON's Approach

Yet, even as Parimutuel systems have their clear advantages over traditional ones, ARENATON takes it a step further.

Staying true to the above-described core values of the Parimutuel methodology, ARENATON infuses two innovative layers to elevate the betting experience:

1. *Holistic ecosystem:* The system encompasses a multitude of rewards for diverse interactions, creating a rich and engaging platform for participants.
2. *Strategic play:* With the introduction of the native coin ATON, participants are now able to strategically influence and increase their potential dividends without stretching their actual investment.

## 2.4 Event Mechanics in ARENATON

1. ARENATON operates as a decentralized online betting platform where participants can initiate or participate in sports events.
2. Players start events by placing stakes in the form of USDT, USDC, DAI, or VUND. All stakes, regardless of their original currency, are converted into VUND within the platform.
3. After an event is initiated, the Oracle cross-references the event's details with the FlashscoreAPI to validate the specifics.
4. Once validated, the event specifications are archived securely within the VAULT contract. Concurrently, the staked tokens are converted to VUND and deducted from the player's digital wallet.
5. Rewards from these events are then issued in ATON tokens to the deserving participants.

## 2.5 Distinct Advantages of ARENATON

*Decentralized Fund Management:* Unlike many traditional platforms, ARENATON has championed a decentralized model. All funds within the ecosystem are managed by the VAULT (more on that later), eliminating central control and introducing enhanced security and trust.

*Powered by Smart Contracts:* ARENATON's architecture is built upon the immutable foundation of smart contracts. This ensures that the need for trust is transitioned away from a singular central entity, thereby mitigating risks associated with potential fraud, insolvency, and maladministration.

*Transparent Transactions:* Every transaction within the ecosystem is open for audit on the blockchain, allowing participants to verify the authenticity of their stakes, winnings, withdrawals, and conversions.

*Efficient User Onboarding:* ARENATON has simplified the onboarding process, removing bureaucratic barriers. By allowing direct wallet connections, it has successfully eliminated the need for exhaustive registration processes.

*Data Privacy & User Empowerment:* In an era where data breaches are prevalent, ARENATON ensures user data privacy by requiring only wallet connections for operations. This not only safeguards personal information but also puts users in control of their data.

*Streamlined Betting Experience:* The platform is designed for agility. Without the need for lengthy sign-ups, players can engage in betting activities promptly, ensuring user retention and satisfaction.

## 3. Tokenomics

### 3.1 ATON

In the Arbitrum Goerli testnet,  $1.0 \times 10^{55}$  ATON tokens are initially minted and deposited entirely into the VAULT. After a designated period following the testnet launch, a snapshot is taken, counting the number of events each address has participated in.

For the live launch on Arbitrum, 99.99% of the  $1.0 \times 10^{55}$  ATON tokens are directed to the VAULT. The remaining tokens are assigned to a smart contract proportionally based on each address's event count.

This means that the more events a user participates in, the more ATON they will receive in airdrops, creating a deflationary model. Moreover, ATON tokens utilized for leverage in events are sent to a burn address, permanently reducing the circulating supply of ATON.

### 3.2 VUND

The initial supply of VUND is 0. ARENATON employs a systematic mechanism where VUND is created when users stake, maintaining a 1:1 parity with stablecoins such as USDT, DAI, and USDC, effectively establishing a liquidity pool. When a player executes a swap to withdraw their winnings, the VUND they input is burned, thus maintaining balance.

VUND holders receive proportional shares of commissions from sports events and swap transactions. Whenever a commission is received, the VAULT calculates the share for each VUND holder based on the total supply.

Additionally, records are kept of the accumulated value per VUND, as well as the commissions taken by the player. This distribution is automatically enforced when VUND is transferred, benefiting both the recipient and the sender.

House profits are generated because the VAULT acts as a VUND holder.

In the next chapters, we will delve deeper into each of ARENATON's tokens mechanics.

## 4. ATON

### 4.1 Overview

As decentralized finance continues to evolve, creating mechanisms to sustain token value, foster user engagement, and reward strategic participation becomes imperative. ARENATON's native token ATON embodies this vision, bringing together pioneering financial mechanics to incentivize users in both the short and long term.

ATON is an ERC-20 token serving as the primary currency for transactions and interactions within the ARENATON platform. It is pivotal for activities like staking, leveraging initial investments, or earning rewards. ATON benefits from the Ethereum ecosystem's scalability, security, and interoperability, allowing for potential integrations and partnerships for ARENATON.

### 4.2 Deflationary Function

The deflationary nature of the ATON token ensures a diminishing supply over time.

As transactions occur, a fraction of the token is logarithmically burned, reducing the total supply and potentially augmenting the token's value. This mechanism serves a dual purpose: rewarding long-term holders by creating scarcity and supporting the token's intrinsic value.

The logarithmic valuation mechanism of ATON ensures early participants gain distinct advantages. As more tokens get burned, the subsequent reward increase becomes progressively subdued. This rewards early users and necessitates long-term strategic planning, fostering a vibrant, proactive community.

Moreover, every interaction involving ATON leverage prompts a token burn as well. Every instance of ATON utilized for leveraging purposes is directed to a burn address, permanently removing it from circulation.

### 4.3 ATON Leverage

ATON Leverage provides users with the ability to amplify their stakes.

ATON design allows users the capability to strategically leverage their stakes up to an equivalent value of their VUND holdings. This foundation is pivotal for users as it offers them flexibility and control over their investments.

The degree of this leverage is intrinsically linked to the amount of ATON burned. As more ATON tokens are expended, the potential for increased leverage grows. It's a system that not only

rewards user participation but also ensures that ATON remains a dynamic asset within the ecosystem.

One advantageous strategy for users is to retain ATON within their wallets, deploying it particularly when its effective value is in an upward trajectory. This method allows for users to capitalize on favorable market conditions, maximizing their returns.

Furthermore, the act of staking or burning ATON has an amplifying effect on the player's stakes. Each transaction, whether it involves adding to or reducing the ATON supply, serves to potentially magnify the payouts. This provides an additional layer of strategy and engagement for participants on the platform.

## 4.4 ATON Factor

*CalculateFactorAton* is an innovative function that dynamically adjusts betting dynamics, enabling players to effectively leverage their stakes in changing market conditions, especially for sophisticated players.

ATON's factor is computed with the logarithmic function, ensuring that, despite an escalating burn rate, the factor's growth slows over time:

\*equation\*

## 5. VUND

### 5.1 Overview

VUND is the platform-native stablecoin. Uniquely designed, it treats USDT, USDC, and DAI as equivalents, enabling frictionless swaps between these major stablecoins without any loss in value. VUND is central to ARENATON's economics, and all platform's commissions are redistributed to VUND holders. Moreover, users can leverage their stakes up to 100% of their VUND holding, promoting strategic leveraging on the platform.

### 5.2 VUND's Unique Proposition

*Unified Stablecoin:* VUND stands out by treating three stablecoins - USDT, USDC, and DAI - as equivalents. This innovative approach eliminates any disparity and offers a consistent experience for users. By leveraging the Automated Market Making (AMM) mechanism, frictionless swaps between these major stablecoins are facilitated without any loss in value, ensuring a fluid and balanced exchange.

*Rewards:* VUND is central to ARENATON's economics. All platform commissions, including profits from bookmaking activities, swap returns, and NFT sales, are channeled to VUND

holders. This positions VUND holders at the forefront of the platform's financial rewards, making them pivotal players in the ecosystem.

*Earning VUND:* Acquiring VUND within the platform ecosystem is possible solely through staking stablecoins and subsequent wins. Importantly, it's vital for stakeholders to recognize that ARENATON neither offers ATON nor VUND for direct purchase.

## 5.3 ATON to VUND Conversion Mechanism

The platform offers a unique conversion mechanism between its native ATON token and stablecoin VUND.

There are three benefits of this conversion mechanism:

1. *Incentivization:* The ATON to VUND conversion rate, enhanced by the token burn procedure, serves as a primary incentive for user engagement. It stimulates active staking, conversion, and platform interaction.
2. *Value Safeguarding:* The mechanism's architecture inherently protects the value of ATON against market devaluation risks, assuring stakeholders of sustained investment value.
3. *Adaptable Valuation:* By tying the VUND conversion to the token burn count, ATON's valuation becomes flexible, making the platform adaptable and resilient against market changes.

The conversion of ATON to its VUND value is determined by:

\*conversion graph\*

### Components of the Conversion:

*VUND leverage:*

Denotes the leverage value in VUND corresponding to the staked ATON.

*ATON:*

Represents the quantity of staked ATON tokens by the user.

*FactorAton:*

A dynamic factor calculated based on the number of burned ATON tokens.

*pctDenom:*

A constant (for instance, 10,000,000) integrated into the smart contract to assure accurate scaling and precision during the conversion.

This unique formula guarantees a consistent conversion of ATON to VUND, providing users with a stable value proposition within the ecosystem.

## 6. Smart Contracts

### 6.1 Overview

Smart contracts are pivotal in the ARENATON ecosystem, ensuring transparent, immutable, and automated operations executed when predetermined conditions are met. These contracts minimize the need for intermediaries, optimize operational efficiency, and build trust within the platform.

Four essential contracts — ATON, Arenaton Contract, SwapController, and the VAULT — provide financial instruments foundational frameworks, facilitate token swaps, and act as the primary custodians of assets, respectively. All contracts used on the platform undergo rigorous auditing and validation by crypto experts, resulting in high scores for security and functionality.

### 6.2 The Arenaton Contract

The Arenaton Contract serves as the foundational framework, encapsulating the rules, percentages, and values governing the platform. This contract is designed to be adaptable, allowing for rule adjustments to enhance resilience and trust as the landscape evolves.

The system facilitates accuracy in betting through a dedicated ORACLE, eliminating potential human biases. By offloading the responsibility of data input to a dedicated ORACLE, the system not only guarantees the precision of information but also reduces the potential for human-induced biases or errors.

### 6.3 ATON

ATON, an ERC-20 token, serves as the primary currency, powering transactions and interactions on the platform. Learn more in [the ATON section](#).

### 6.4 VAULT

The VAULT holds a significant position, acting as the principal custodian of assets, solidifying the economic foundations of the ecosystem.

VAULT is in charge of keeping a record of VUND holders and the prompt delivery of their rewards.

By ensuring that the core VAULT remains untouched while auxiliary contracts evolve, we provide both stability and adaptability — a rare combination in the ever-changing crypto world.



## 6.5 SwapController

The SwapController plays a crucial role in token swapping, ensuring seamless asset exchanges within the system.

### *Token Swap Mechanics:*

The SwapController allows users to easily exchange tokens and specify desired amounts. ARENATON implements the Curve Finance Method of Invariance to calculate the swaps.

### *Commission Dynamics:*

SwapController's commission system calculates VUND equivalent commissions for swap operations, promoting transparency by keeping users informed of transactional costs.

### *Safety Protocols and Token Interactivity:*

The SwapController ensures transaction robustness by executing checks on token balances and readiness status, shielding users and contracts from potential pitfalls.

### *Economic Stability:*

The contract maintains an economic balance by correcting discrepancies between token value and VUND supply, either by introducing new tokens or removing the excess.

### *Commission Distribution:*

SwapController revolutionizes token transfer by awarding commissions to both sender and recipient, ensuring direct benefits for users in every ecosystem interaction. It allows users to claim their share of commissions proportional to their VUND holdings, ensuring equitable distribution. SwapController uses the VAULT to distribute commissions.

## 6.6 Additional Infrastructure

### Flash Score API

To ensure the authenticity of its operations, ARENATON integrates with the FlashScore API, an industry leader for sports data. This integration enables users real-time updates on events from more than 180 countries, guaranteeing data accuracy, essential for informed decision-making in the dynamic world of betting.

### Oracle

*\*add info\**

# 7. NFT

## 7.1 Introduction

In the rapidly evolving world of decentralized digital assets, the significance of Non-Fungible Tokens (NFTs) has risen prominently. These digital tokens, representing ownership of a distinct item or piece of content on the blockchain, have started reshaping the landscape of digital ownership and value.

Recognizing the transformative potential of NFTs, ARENATON has integrated them into its platform, paving the way for a sophisticated collection system.

## 7.2 NFT Categories and Qualities

Understanding the depth and variety of NFTs offered by ARENATON requires a dive into its categorization and quality grading system. Both these elements play a crucial role in defining the value, utility, and rarity of each NFT.

ARENATON offers an extensive array of 32 NFT categories.

30 of them cover a wide range of sports.

When staked, these NFTs grant a bonus (as per their multiplier) to ATON rewards for their specific sport.

2 standout categories are the ATON Rocket and VUND Rocket. These specialized categories highlight the seamless integration of ARENATON's native tokens into the NFT ecosystem.

The ATON Rocket provides a sport-agnostic bonus, ensuring enhanced rewards irrespective of the sport in question.

On the other hand, the VUND Rocket specializes in providing additional leverage when betting with VUND, thus magnifying the betting power.

Each NFT, based on its rarity and utility, is assigned a quality grade. These grades, coupled with their associated multipliers, determine the value and advantage an NFT can offer to its holder.

The qualities are as follows:

- Common (X1)
- Uncommon (X2)
- Rare (X3)
- Epic (X4)
- Legendary (X5)
- Ancient (X6)

Each quality not only represents the rarity of the NFT but also has an intrinsic multiplier. For instance, a Rare NFT would offer a reward multiplier of X3. The NFT's multiplier plays a pivotal role, especially when these NFTs are staked. Depending on their quality, they grant a bonus to ATON rewards specific to their associated sport or category.

This direct correlation between NFT quality and rewards amplifies the strategic importance of owning higher-quality NFTs within the ARENATON ecosystem.

## 7.3 NFT Acquisition Mechanism

ARENATON's NFT platform is designed to reward active and strategic participation. Instead of the conventional systems where NFTs serve as collectibles, ARENATON's NFTs come equipped with enhanced bonuses. The foundation of this system lies in rewarding users based on their staking activities within the platform. Each NFT, depending on its type and rarity, carries specific bonuses that users can leverage.

Furthermore, the probability of acquiring these NFTs is not solely dependent on chance. Active participation, including activities such as initiating and concluding events, maximizing stakes, and engaging in outcomes—whether wins, losses, or draws—all contribute to the likelihood of minting rare NFTs.

To facilitate this, ARENATON employs a comprehensive probability table that takes into account the breadth and depth of a player's engagement, serving as the primary determinant for NFT minting.

This system ensures that users who exhibit consistent and extensive engagement with the platform stand a higher chance of securing rare NFTs.

## 7.4 NFT Fusion

ARENATON also introduces a fusion feature. With this mechanism, players can merge three NFTs of the same Category and Quality to forge a single, rarer NFT.

To do that each NFT needs to be 'charged' by staking it and actively participating in its associated sport event. The number of events required to charge an NFT varies based on its quality:

- Common: 2 events
- Uncommon: 4 events
- Rare: 8 events
- Epic: 16 events
- Legendary: 32 events
- Ancient: Cannot be charged

Betting with VUND offers an inherent 10% leverage. However, with an Ancient Rocket, the leverage can surge up to 50%, making the peak potential leverage 150% during betting. This not only adds an exciting layer to betting but also integrates the NFTs seamlessly into the core mechanics of the ARENATON ecosystem.

It's noteworthy that transferring an NFT causes it to lose its charge. This design choice promotes genuine farming and active participation, as opposed to mere collection and transfer.

## 7.5 Staking NFTs

In the ARENATON ecosystem, staking is not just a passive activity but a strategic tool. NFT stacking is engineered to optimize rewards and enhance user engagement.

A user can stake up to 32 NFTs, limited to one per category. This not only activates associated bonuses but also skews the probability away from acquiring a Common NFT, enhancing the chance for rarer acquisitions.

The NFT Level correlates directly with the number and quality of NFTs staked. This influences the potential rewards and bonuses a user is eligible for.

The Vault Level is determined by user activity. Actions like initiating an event, concluding it, or even outcomes like wins, losses, or draws contribute to the vault level:

- Open Event: 1 point
- Close Event: 1 point
- Max Stake: 1 point
- Loss: 1 point
- Draw: 2 points
- Win: 3 points

By being proactive and engaging strategically with the platform, users can maximize both their rewards and their NFT collections.

## 8. Roadmap

Outlined below is the strategic roadmap for ARENATON, detailing our 3-phase approach from testnet deployment to the final live publication.

### 8.1 Testnet Publication

*Objective:* Launch Arenaton on the testnet to ensure robustness, security, and functionality.

*Key Activities:*

- Smart Contract Deployment: Deploy and test the smart contracts on the testnet.
- User Testing: Invite users to test the platform's features and functionality.
- Bug Fixes: Identify and address any bugs or issues encountered during testing.
- Snapshot for ATON Distribution: Capture a snapshot of all events where players have participated.

## 8.2 Mainnet Snapshot and ATON Distribution

*Objective:* Reward active users with ATON tokens based on their event participation.

*Key Activities:*

- Snapshot: Capture a snapshot of all events where players have participated on the mainnet.
- ATON Allocation: Calculate and allocate ATON tokens to users based on their participation percentage.
- Wallet Integration: Enable airdrops to claim their ATON rewards in their wallets.
- Live Environment Testing: Conduct thorough testing of the ATON distribution process on the mainnet.

## 8.3 Live Publication

*Objective:* Launch Arenaton on the live/mainnet environment, allowing users to enjoy a decentralized sports prediction experience.

*Key Activities:*

- Smart Contract Deployment: Deploy the final smart contracts on the mainnet.
- User Registration: Enable user registration and onboarding.
- Event Listing: Populate the platform with live sports events for prediction.
- Marketing and Promotion: Promote Arenaton to attract a wider user base.
- Community Engagement: Foster a supportive user community.

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