Whitepaper

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Decentralized Options Protocol

Abstract: *Rain is a decentralized options protocol designed to redefine how markets predict and incentivize future events. It combines robust decentralized prediction markets with innovative incentive-driven mechanisms, empowering participants to engage seamlessly across a broad spectrum of event scales - from major global occurrences to specialized niche scenarios.*

Rain's automated market maker (AMM) architecture, decentralized oracle integration, and transparent pricing methodology transform outcomes into tradable and incentivized assets. This approach not only democratizes market creation and participation but also aligns incentives around real-world actions, enhancing collective forecasting accuracy and actively shaping desired outcomes.

1. Introduction

Current prediction markets, both centralized and semi-centralized, typically focus solely on significant global events, often neglecting broader market accessibility and versatility. Their restrictive architecture prevents effective market creation for diverse and varying scales of events, limiting both usability and practical impact.

Rain emerges with a transformative vision - offering a universally adaptable automated outcome markets protocol capable of handling events of any scale efficiently and elegantly. Its hybrid market architecture, inspired by advanced decentralized finance models, ensures fluid market dynamics, automated liquidity adjustments, and precise pricing, supporting events ranging from globally significant to highly specialized ones without compromise.

Leveraging a decentralized oracle system, with a built-in dispute process, Rain ensures outcome verification remains accurate, trust-minimized, and resilient. Initially built upon the Arbitrum blockchain with future support for additional networks planned, the Rain protocol is designed to evolve into a transparently governed system via the $RAIN governance token. It embodies a vision of democratized, accessible, and dynamic outcome markets that will shape a more predictable and incentivized future.

2. Protocol Overview

Rain operates as a fully decentralized options protocol, built to accommodate a diverse array of predictive and incentive-driven markets. It employs an Automated Market Maker (AMM) system that efficiently manages liquidity and share pricing. This innovative architecture enables frictionless market creation, participation, and resolution, functioning seamlessly irrespective of market size or liquidity conditions.

3. How Outcome Markets Work

Market Creation

Any user can create a market on Rain by clearly defining an outcome with multiple possible options. Markets can be set as public or private, ensuring versatile applicability from global predictions to community-specific events. A minimum of $10 liquidity must be placed for each market that is opened.

Automated Market Makers (AMM) and Share Pricing

Rain utilizes an intuitive and transparent pricing mechanism. The total funds in a market are automatically distributed among outcome options, with each option's price dynamically reflecting the proportion of total funds allocated to it. If 50% of the funds are placed on Option A, its share price is automatically set to $0.50. As new funds flow into different options, prices are adjusted proportionally and automatically, maintaining continuous market equilibrium.

The share price of each outcome option, along with its corresponding payout multiplier (referred to as "Line"), is dynamically determined based on the proportion of funds allocated to that option. This reflects the market's current assessment of the probability of each outcome.

The relationship between share price and the Line is defined as follows:

Line (Payout Multiplier) = 1 / Share Price

The Line indicates the potential return for each unit of currency (e.g., $1) placed on a specific outcome. In essence, it represents the multiplier applied to the stake if that outcome is realized.

For Example: If the Line is 4.2, each $1 placed on that option would yield a $4.2 payout upon successful resolution of that outcome.

Fees

The Rain protocol incorporates the following fees:

- 1.2% to the market creator
- 1.2% to the liquidity provider(s)
- 0.1% to the resolver
- 2.5% for buying back and burning $RAIN

Dispute Fee
If a participant believes the decided market outcome is incorrect, they can open a dispute. To do so, the disputer must put up a collateral of 0.1% of the market volume or $1000, whichever is less.

No Refund Policy
Once funds are committed to a market, there is no refund mechanism. Participants should be aware that all wagers are final, irrespective of the market's outcome or any subsequent disputes.

Outcome Resolution

Rain employs a decentralized and robust resolution mechanism designed for accuracy, trust-minimization, and resilience. For public markets, outcomes are determined by an advanced AI-based oracle developed by Olympus AI, called Delphi, ensuring impartial and data-driven results. For private markets, the market creator acts as the resolver. A built-in dispute system ensures fairness and transparency.

Public Markets

Anyone can create a public market, and all public markets are resolved by Delphi, the specialized AI oracle. Here’s a quick explanation about how Delphi works:

Delphi operates on a consensus-driven system to verify information. It employs a multi-agent architecture: five "Explorer Agents" powered by leading LLMs independently gather diverse information from the internet, and one "Extractor Agent" then analyzes these findings. An answer is only confirmed when at least three of the five Explorer Agents agree. This method filters out inaccuracies and delivers objective, trustworthy answers. Furthermore, Delphi is designed to always select one of the options listed, even if it’s ambiguous or appears to be nonsensical, ensuring that a market never remains unresolved.

Here's how the resolution process unfolds in the case of public markets:

- Initial Resolution: The outcome is initially resolved by Delphi, the decentralized AI oracle.
- Dispute Window: After the initial resolution by the decentralized oracle, participants have a set time frame to file a dispute if they disagree with the resolution. Filing a dispute requires putting up a collateral (0.1% of the market volume or $1000, whichever is less).
- Escalation to Human Oracles:
    - Dispute Filed: If a dispute is filed, the resolution is escalated to multiple decentralized human oracles provided by Olympus AI for a final decision. The collateral put up by the disputer is held.
    - If the disputing party is deemed correct by the human oracles, the disputer will receive their collateral back, and the 0.1% resolver reward will be sent to the human oracles.
    - If the human oracles decide that Delphi was right, the collateral will go to Delphi, and the 0.1% resolver reward will go to the human oracles as compensation for their service.
- No Dispute Filed: If no dispute is filed within the set time frame, the initial resolution by Delphi stands, and participants can proceed to make claims. The 0.1% resolver reward will go to Delphi.

Private Events

In private events, the market creator acts as the resolver, and they can resolve the market immediately. It is crucial to trust the creator of a private event, as they have the sole authority to resolve the outcome and could potentially take advantage of participants. Therefore, participants should only engage in private events if they know and fully trust the market creator.

However, participants can dispute the outcome decided by the creator and escalate the matter to human oracles.

Example Scenario

1. A user opens a private market and puts up $550 as liquidity.
2. Other users participate in the market, wagering against their predictions.
3. The market outcome is resolved by the market creator.
4. A user files a dispute, putting up a certain sum as collateral (0.1% of the market volume or $1000, whichever is less). For the sake of this example, let's say that the market volume is $50,000, so the disputer puts up $50 (0.1% of 50,000).
5. The resolution is escalated to human oracles provided by Olympus AI.
6. The human oracles determine the correct outcome.

7. If the disputer wins the dispute, they get their $50 collateral back. The 0.1% resolver's reward is sent to the human oracles who adjudicated the dispute.
8. If the original resolver (the market creator) wins the dispute, the $50 staked collateral goes to them, and the 0.1% resolver reward goes to the human oracles.

Incentive Markets

In addition to traditional prediction markets (primarily utilizing stablecoins like USDT), Rain will introduce incentive markets that complement traditional predictive functionalities. These markets uniquely enable participants to proactively create financial incentives to realize specific outcomes, fostering active engagement and tangible impact. This mechanism provides organizations and communities a powerful tool to actively influence desired outcomes, such as reaching particular milestones or targets.

Liquidity-Preserving Exit Mechanism

Rain incorporates an advanced liquidity-preserving exit mechanism utilizing account abstraction, enabling participants to exit positions without withdrawing liquidity. This innovative method involves several detailed steps:

1. Position Entry: Users initially purchase shares via the market, with new shares minted and prices set according to the AMM formula.
2. Sell Order Placement: Users wishing to exit positions place conditional sell orders specifying their desired quantity and minimum acceptable price.
3. Internal Buyer Matching: When new buyers enter the market, the protocol matches them internally with existing sell orders.
4. Liquidity Integrity: All matched trades occur internally, preserving market liquidity.

4. Decentralization and Protocol Economics

Rain integrates elements of both Proof-of-Work and Proof-of-Stake mechanisms, creating a robust decentralized economy:

- Proof-of-Work: Contributors who create markets, provide liquidity, and resolve outcomes actively contribute "work" to the protocol, receiving direct rewards.

- **Proof-of-Stake:** Participants demonstrate "stake" by providing liquidity and staking tokens during disputes, ensuring commitment and accountability.

Rain is governed by a decentralized autonomous organization (DAO), allowing multiple third-party front-ends and embedding functionalities, demonstrating true decentralized control and governance.

5. Tokenomics and Governance

The $RAIN Token

$RAIN is the protocol's native governance token, currently operating on Arbitrum. It is not required to use Rain's app but will be essential for participating in governance and shaping the protocol's future.

Token Utility

At launch, $RAIN is strictly a governance token. Users do not need to hold $RAIN to participate in markets. When the DAO will be established later on, only those who wish to contribute to the protocol's evolution - by submitting or voting on proposals - will need to hold the token.

The DAO will be able to decide on additional token utilities in the future. For example: Requiring a minimum token holding to create a market.

Deflationary Mechanism

Rain introduces a powerful deflationary component designed to reward holders as the protocol grows:

- 2.5% of the trading volume in every prediction market is used to buy back and burn $RAIN tokens.

This creates constant downward pressure on supply as usage increases, tying token scarcity directly to protocol activity and adoption.

Inflationary Mechanism

To support ongoing growth and incentivize contributors, Rain also employs a carefully controlled inflation model:

- No inflation during the first 3 months post-launch.

- Starting in month 4, the protocol will mint $50,000 worth of RAIN tokens daily.
- In months 4-12, the newly minted tokens will be allocated to the DAO.

These tokens are allocated to support:

- Team rewards
- Ecosystem development
- Marketing campaigns
- Strategic partnerships
- Community initiatives and contributors

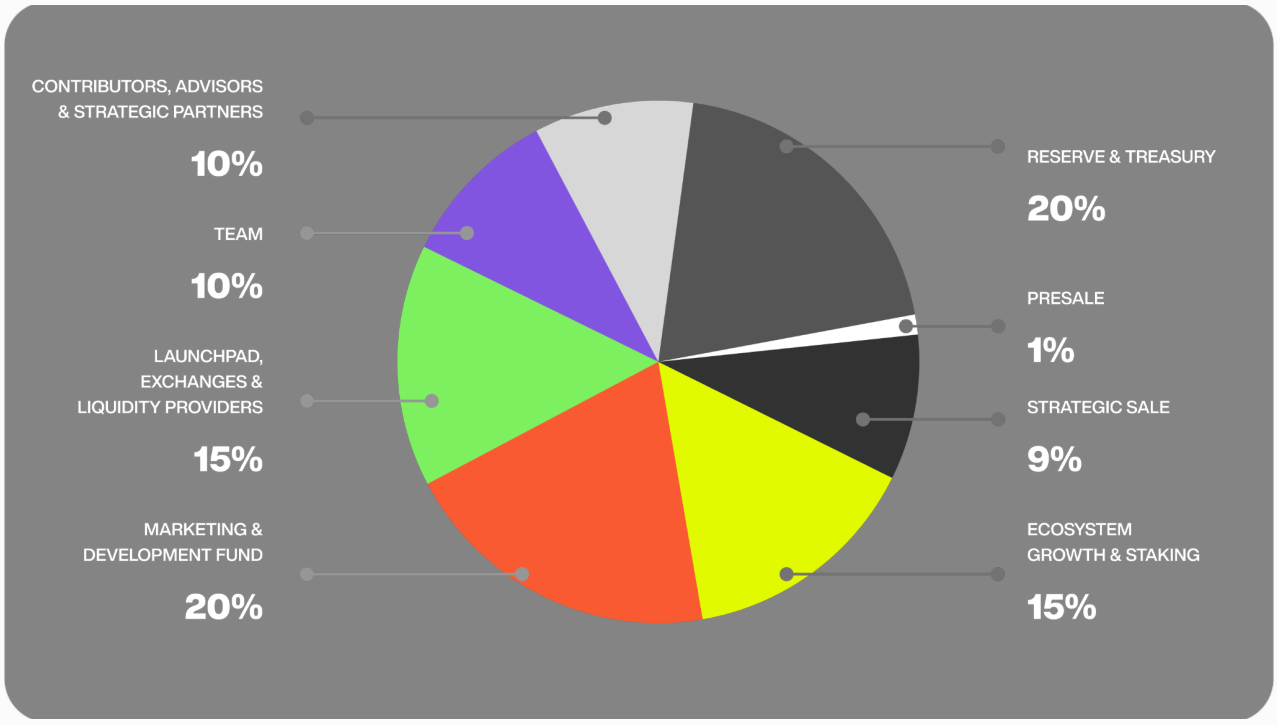
This balance between deflation through usage and inflation through contribution creates a sustainable and incentive-aligned token economy.

Total Supply of $RAIN

The $RAIN token's initial total supply is 1.15 trillion tokens. Note that this is not the maximum supply. The protocol includes both an inflationary mechanism to support ecosystem growth and a deflationary mechanism where 2.5% of trading volume is used to buy back and burn $RAIN tokens. This deflationary pressure offsets the inflation, linking token scarcity to protocol activity and adoption.

Token Distribution

Category	Allocation	Vesting Details	Notes
Presale (Mercury Miner, Private Sale, Credit Refund)	1%	18-month non-linear momentum vesting with monthly unlocks	Only 0.03% will be circulating by the end of the first month after TGE to ensure limited float and early protocol activity.
Strategic Sale	9%	1-month cliff 6-month vesting period	Full confidence in the project with 0% release at TGE.
Contributors, Advisors & Strategic Partners	10%	18-month vesting	Vesting-based rewards for those supporting early growth and long-term development.
Team	10%	1-month cliff 24-month linear vesting with monthly unlocks	No tokens at launch. Multi-year vesting to ensure alignment and long-term commitment.
Marketing & Development Fund	20%	19-month vesting Only 1% (of total supply) released at TGE	Used to fund operations, protocol development, marketing, campaigns, and user acquisition.
Launchpad, Exchanges & Liquidity Providers	15%	No lockup or vesting, used upon need	Supports liquidity provisioning, listings, and key exchange partnerships.
Ecosystem Growth & Staking	15%	12-month linear vesting with monthly unlocks	Used to reward users, fund staking incentives, community grants, and ecosystem expansion.
Reserve & Treasury	20%	18-month cliff 6-month linear vesting with monthly unlocks	Protocol-owned tokens for future use, managed by multisig or DAO governance over time.



6. Roadmap

Rain's strategic roadmap includes:

- **Q3 2025 - Launch & Growth**: Community bootstrapping, oracle integrations, security audit, Token Generation Event (TGE), listings across tier 1 CEXs, buyback & burn mechanism launch
- **Q4 2025 - Platform Maturation**: Official app launch, strategic partnerships and integrations, in-app credits launch, DAO governance rollout.
- **2026 - Ecosystem Expansion**: Cross-chain support, advanced analytics and discovery tools, institutional access & infrastructure.

7. Conclusion

Rain introduces a sophisticated decentralized options protocol, significantly enhancing predictive accuracy, incentivization capabilities, and market accessibility. Its innovative decentralized architecture, combined with balanced tokenomics and community-driven governance, positions Rain as a foundational infrastructure for decentralized market predictions and incentives, driving widespread adoption and lasting impact.