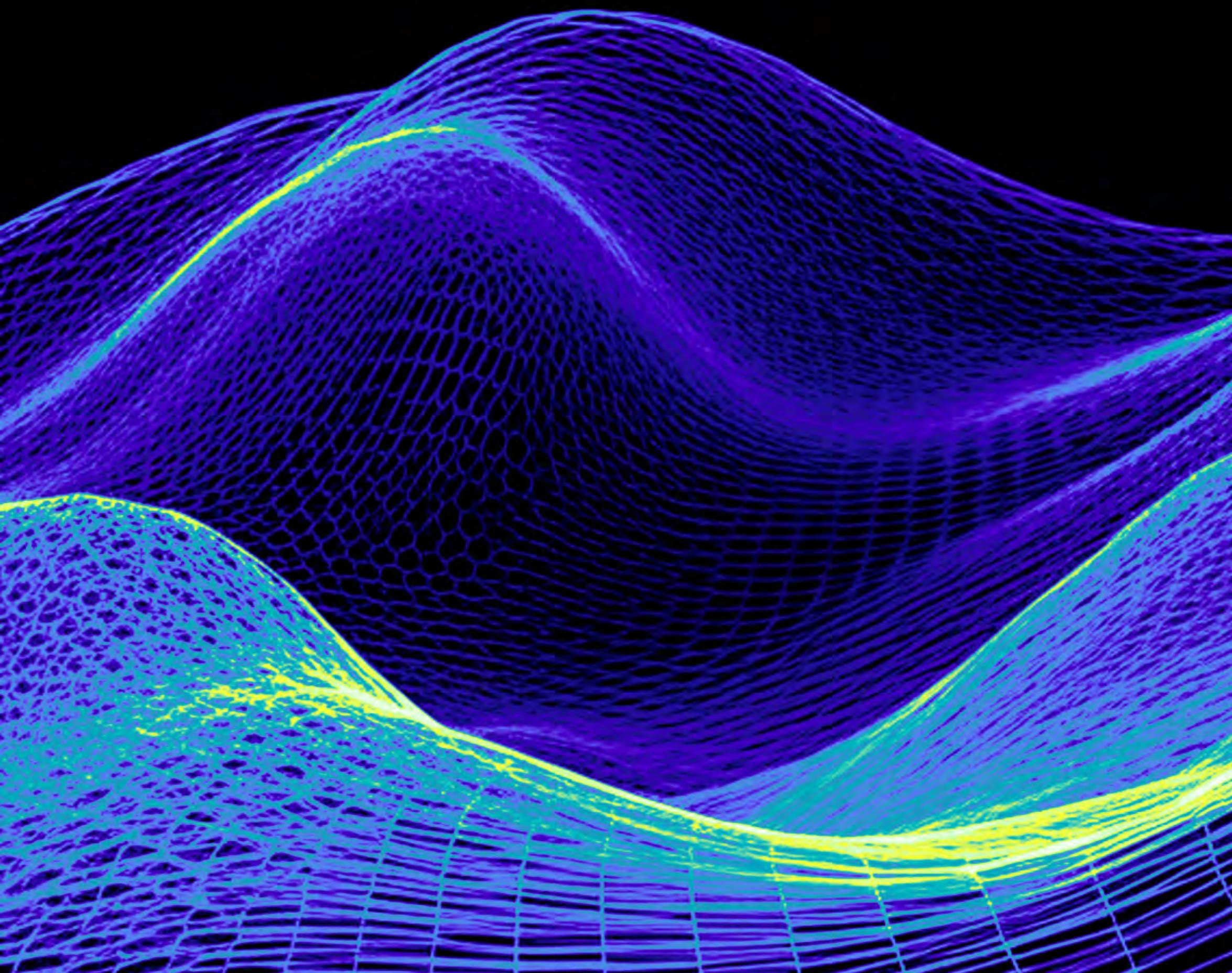


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An Introduction to Panoptic

The perpetual, oracle-free options protocol



Options: The Missing Pillar of Decentralized Finance

Options are financial derivatives that derive their value from an underlying asset, such as crypto tokens, stocks, commodities, or market indexes. The key feature of options is that they offer the right but not the obligation to buy or sell the underlying asset.

Options can be used in a variety of strategic ways depending on the investor's goals and risk tolerance. They are used for income generation, risk management, hedging, and speculation, among other things.



Risk Management

Options serve as powerful financial tools to effectively manage risks associated with price fluctuations, volatility shifts, interest rate changes, and the passage of time.



Speculation

Speculation is another important use of options. With less capital at risk, traders can speculate on the direction of token prices moving up, moving down, moving sideways, moving, not moving, and more!



Hedging

Options can offset potential losses in other investments. For example:

- An investor could use options to protect against potential losses in a portfolio by purchasing put options. If the value of the portfolio declines, the value of the put options would increase, offsetting the losses.
- A Uniswap LP can mitigate their impermanent loss exposure by buying an option (such as a put, straddle, or strangle). A decline in the LP position would be offset by an increase in value of the option.



Capital Efficiency

Options also provide leveraged exposure to an underlying asset. This is because an option commands a larger amount of the underlying asset for a fraction of the price. This leverage allows for potentially larger profits.



Market Efficiency

Moreover, options contribute to ensuring market efficiency. Their prices reflect market participants' expectations about future price volatility of the underlying asset.

Crypto Options: Poised for Explosive Growth



In the realm of traditional finance (TradFi), a shifting balance of power has been observed, with options markets progressively overshadowing spot markets.

The US single-stock options market, for instance, averages an impressive **\$600 billion** in notional volume per day, outpacing the US stock market volume of around \$400 billion per day. This shows the substantial importance of options markets in providing flexibility to traders and facilitating a diverse catering to investor sentiment.

However, the landscape of options in the crypto world is starkly different. The current daily notional volume of the crypto options market stands at just **\$1.35 billion**, a figure outmatched by the size of the crypto spot market, estimated at \$14 billion.

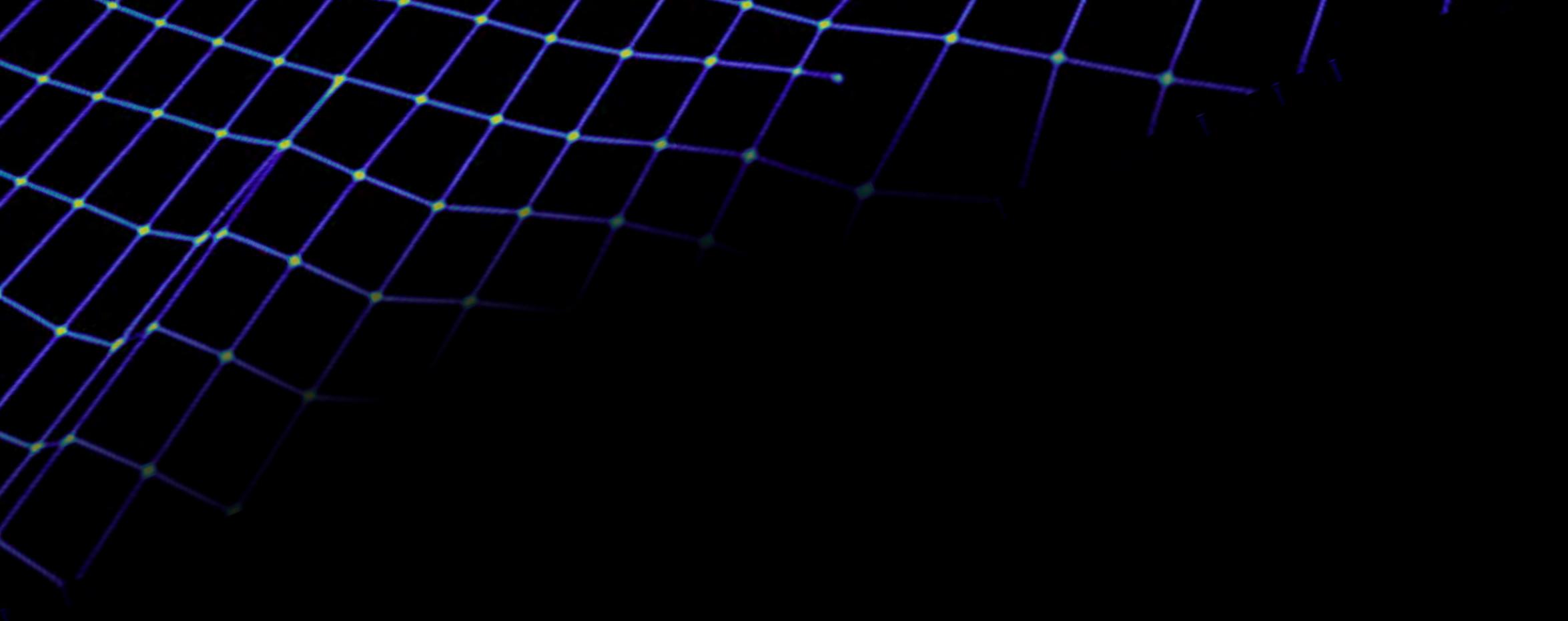
This discrepancy, when compared to the trends in TradFi, underscores the vast untapped potential in crypto options. Enter decentralized solutions like Panoptic, which aim to revolutionize the crypto options landscape by addressing the unique challenges of blockchain technology.

The evolution and expansion of crypto-native options could have profound implications for the broader financial ecosystem.

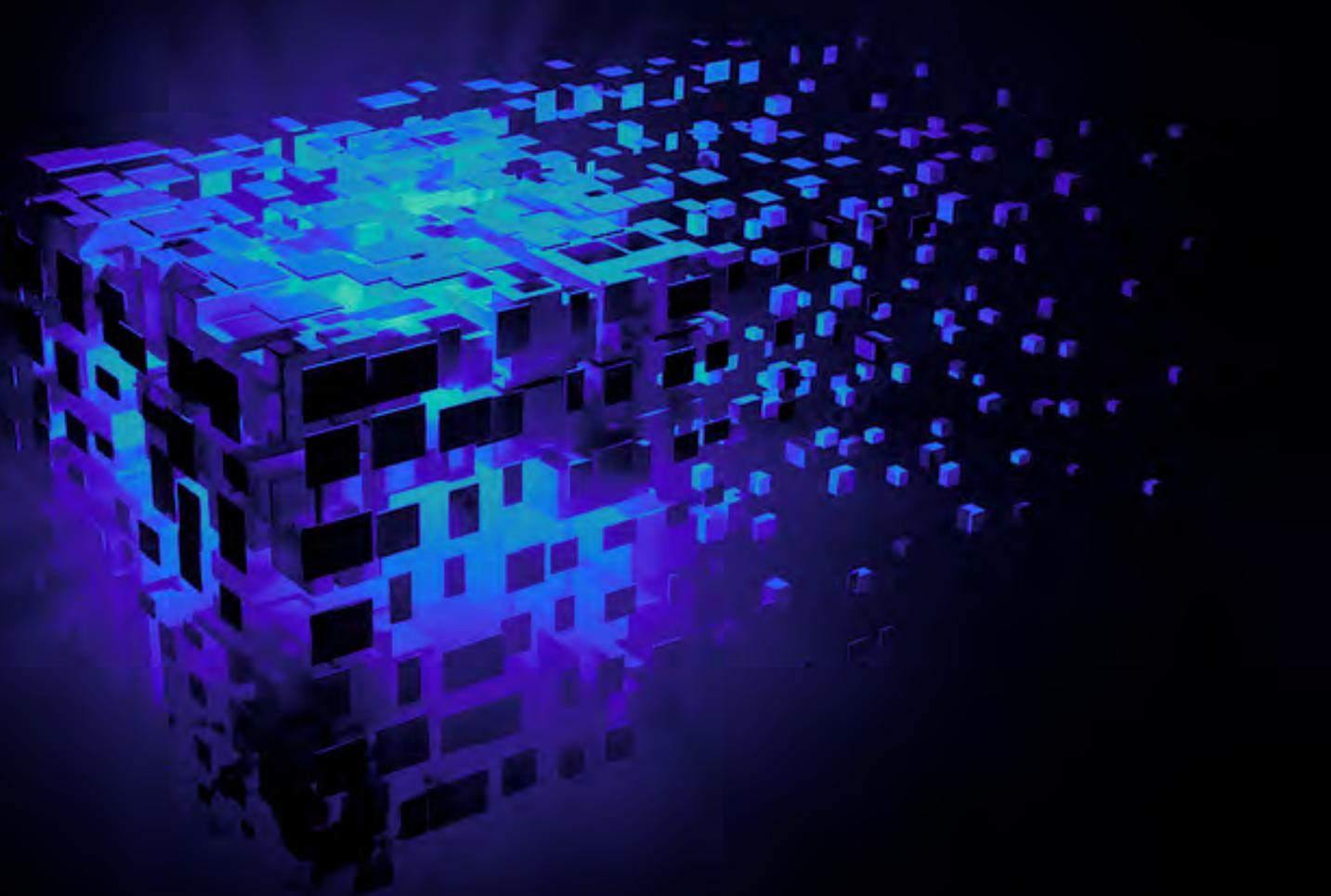
Comparing Options and Spot: TradFi vs Crypto

Daily Notional Trading Volume





Options in Crypto: Why the Slow Uptake?



Problem

The advent of crypto promised a new era of financial instruments, however, options trading within this space has been sluggish. This stems from a complex interplay of factors involving liquidity issues, pricing challenges, and governance constraints that impede the efficient functioning of crypto options markets.



Liquidity

The primary challenge lies in crypto options markets requiring separate liquidity for each product — resulting in capital inefficient fragmentation of liquidity.

This leads to liquidity being scattered across thousands of distinct assets, varying expiry dates, and a multitude of strike prices.

Furthermore, the inherent limitations of blockchain present significant challenges, notably failing to scale to accommodate the low latency order books and sophisticated market making required for a mature options market.

Additionally, external oracles become necessary to accurately compute the Black-Scholes option premia and settle the Profit and Loss of trades, leading to an expensive computational process on chain.



Governance

Finally, the necessity for governance adds an additional layer of complexity.

Decisions on listing crypto assets, building vaults for specific options strategies, and setting strike prices for market-making necessitate collective consensus, hamper market flexibility and restricts product offerings.



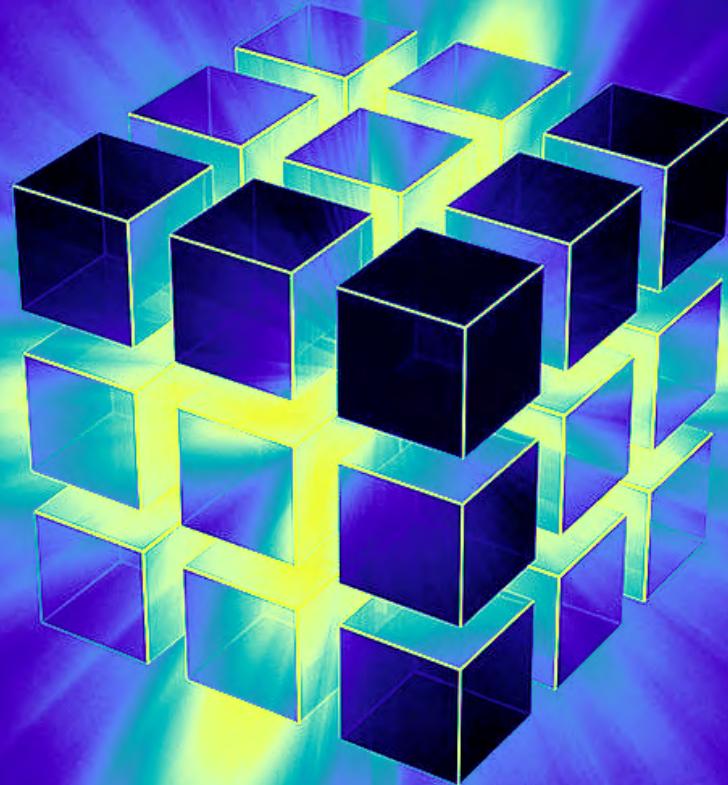
Pricing

The pricing of options in the crypto market is not only manipulable but also expensive, presenting another significant hurdle.

The latency of the blockchain system opens up opportunities to manipulate a block's price, particularly at the point of an option's expiry.



Introducing Panoptic



Solution

Panoptic re-imagines options to work on-chain: options have no expiry and require no oracles, intermediaries, counterparties, or order books. The result is a permissionless, governance-minimized protocol with no liquidity fragmentation.



Perpetual Options

Options are perpetual – they don't expire. Panoptic consolidates liquidity into a single, expirationless product to avoid liquidity fragmentation across different expiry dates common in TradFi.



Unlimited Selling

Even in scenarios where there is a lack of options buyers, options sellers can still reap the benefits of short option payoffs by receiving 'streamia' — or streaming premia — from spot trading activity on the underlying automated market maker (AMM).



Capital Efficient

Designed with capital efficiency in mind, Panoptic supports undercollateralized positions. This allows traders to use less capital, gain access to higher leverage, and construct efficient, multi-legged trades.



Streamia

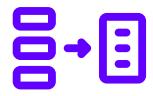
In Panoptic, options pricing is simple and fair.



Two-Sided Market

Panoptic introduces a two-sided market for liquidity provider (LP) positions in Uniswap. By allowing sellers to deposit liquidity into Uniswap when implied volatility (IV) is high and buyers to remove liquidity from Uniswap when IV is low, Panoptic fosters a dynamic marketplace that enhances price discovery and efficiency of liquidity.

Panoptic's streamia is based on real trading activity in the underlying AMM, eliminating the need for manipulable external oracles or computationally expensive pricing.



Permissionless Listings

Listing new options on Panoptic is fully permissionless. Anyone can generate an options pool for any ERC20 tokens, including long-tail assets that are traditionally absent on options exchanges.



Complete Flexibility

Panoptic stands out from other crypto options protocols by providing complete flexibility to traders. They can freely buy, sell, and close multi-legged options at any strike price at any time. This flexibility caters to traders' expectations and will attract more options traders and liquidity to the platform.



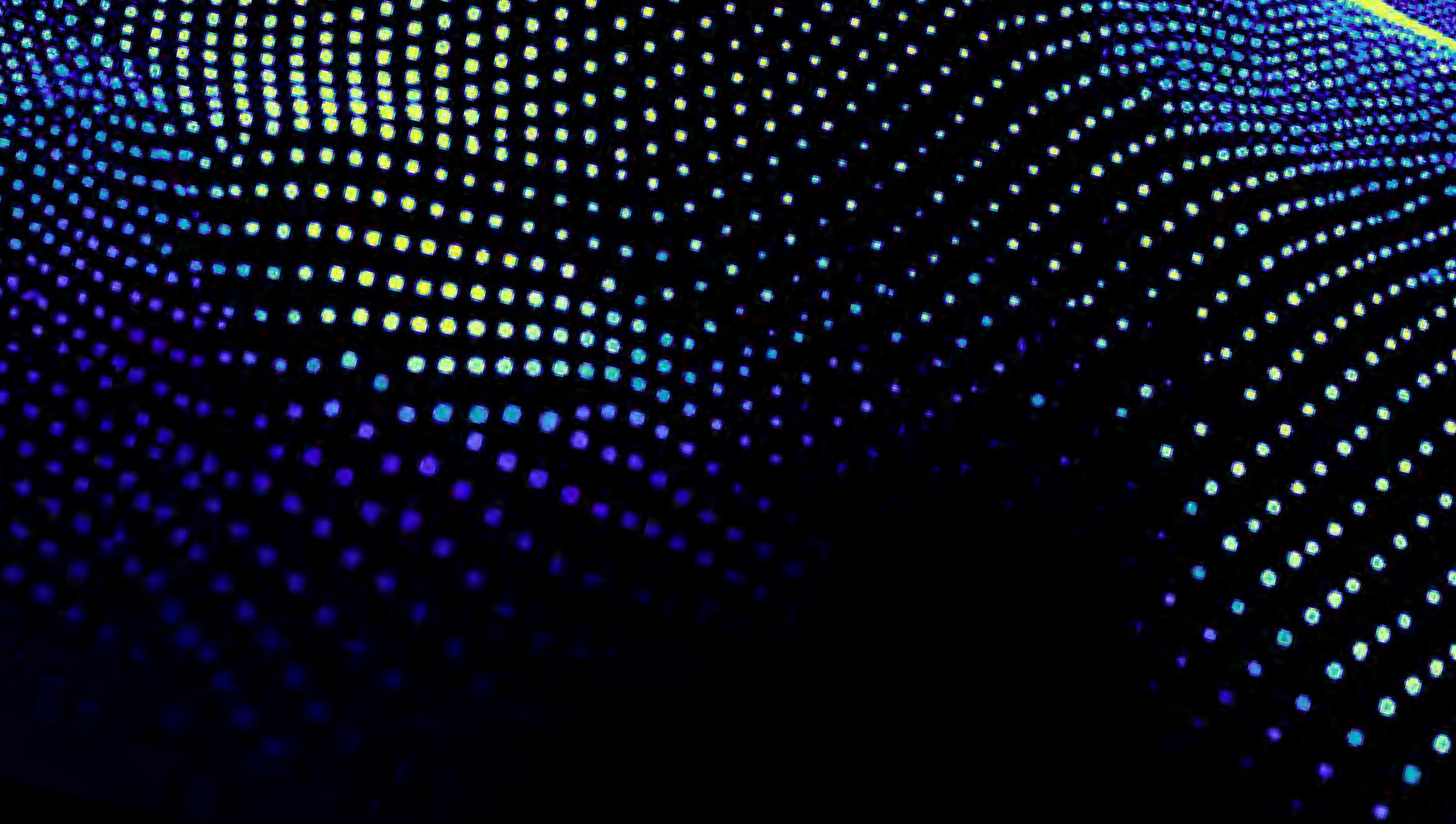
Permissionless Liquidity Provision

Liquidity provision on Panoptic is fully permissionless. Any user can provide any quantity of any token, and traders can borrow fungible liquidity for undercollateralized options trading.



No Trading Minimums

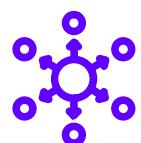
Panoptic removes barriers to entry by permitting traders to buy and sell options of any size, making options trading more accessible to a wider range of participants.



What are the Key Features?

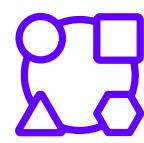
Key Features

Panoptic makes options trading easy and efficient through its innovative features. By eliminating intermediaries and leveraging Uniswap — the world's largest decentralized exchange (DEX) — as a clearinghouse, Panoptic enables anyone to trade options. Users can effortlessly create undercollateralized, non-expiring, multi-legged positions on any ERC20 token, at any size and strike price.



Decentralized and permissionless

Panoptic operates on immutable smart contracts with Uniswap as a decentralized clearinghouse, making crypto options accessible to everyone.



Puts, calls, spreads, straddles, strangles, iron condors, ...

Panoptic supports a wide array of trading strategies, from basic puts and calls to more complex multi-legged positions such as spreads, straddles, strangles, iron condors, and more. This diversity allows users to tailor their trading to their own risk tolerance and market views.



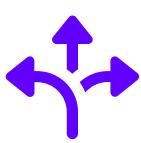
Easily create any position with dragable payoff curves

Users can effortlessly create any options position by dragging a payoff curve. This intuitive interface allows traders to seamlessly fine-tune their strategies.



Undercollateralized and capital efficient

Panoptic is designed for capital efficiency, supporting undercollateralized positions. This allows traders to use less capital, access more leverage, and create efficient, multi-legged trades.



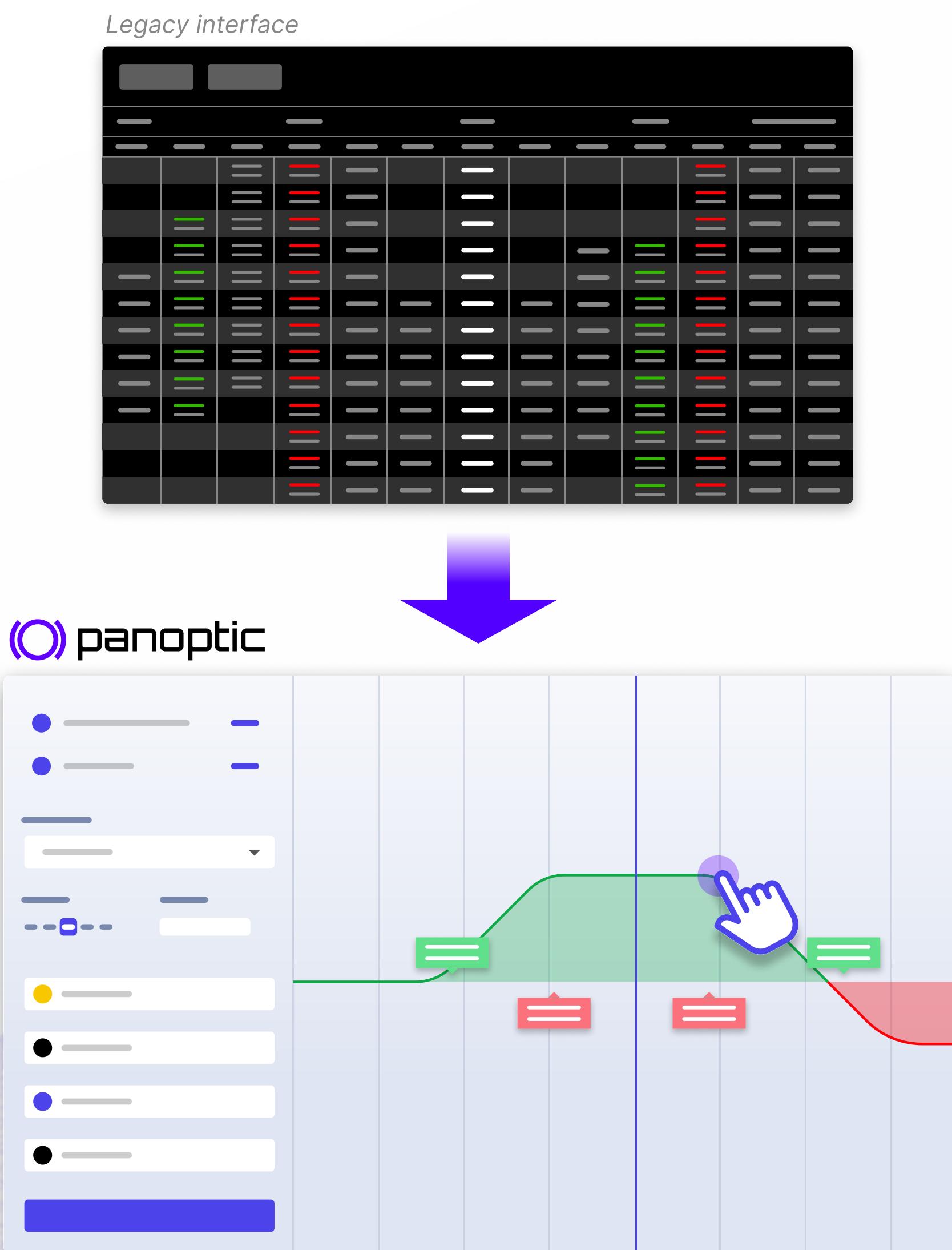
Buy and sell perpetual options on any token, any strike, any size

Panoptic provides users with the flexibility to buy and sell perpetual options on any ERC20 token. Users can trade options at any strike price, creating at-the-money, in-the-money, or out-of-the-money positions of any size.

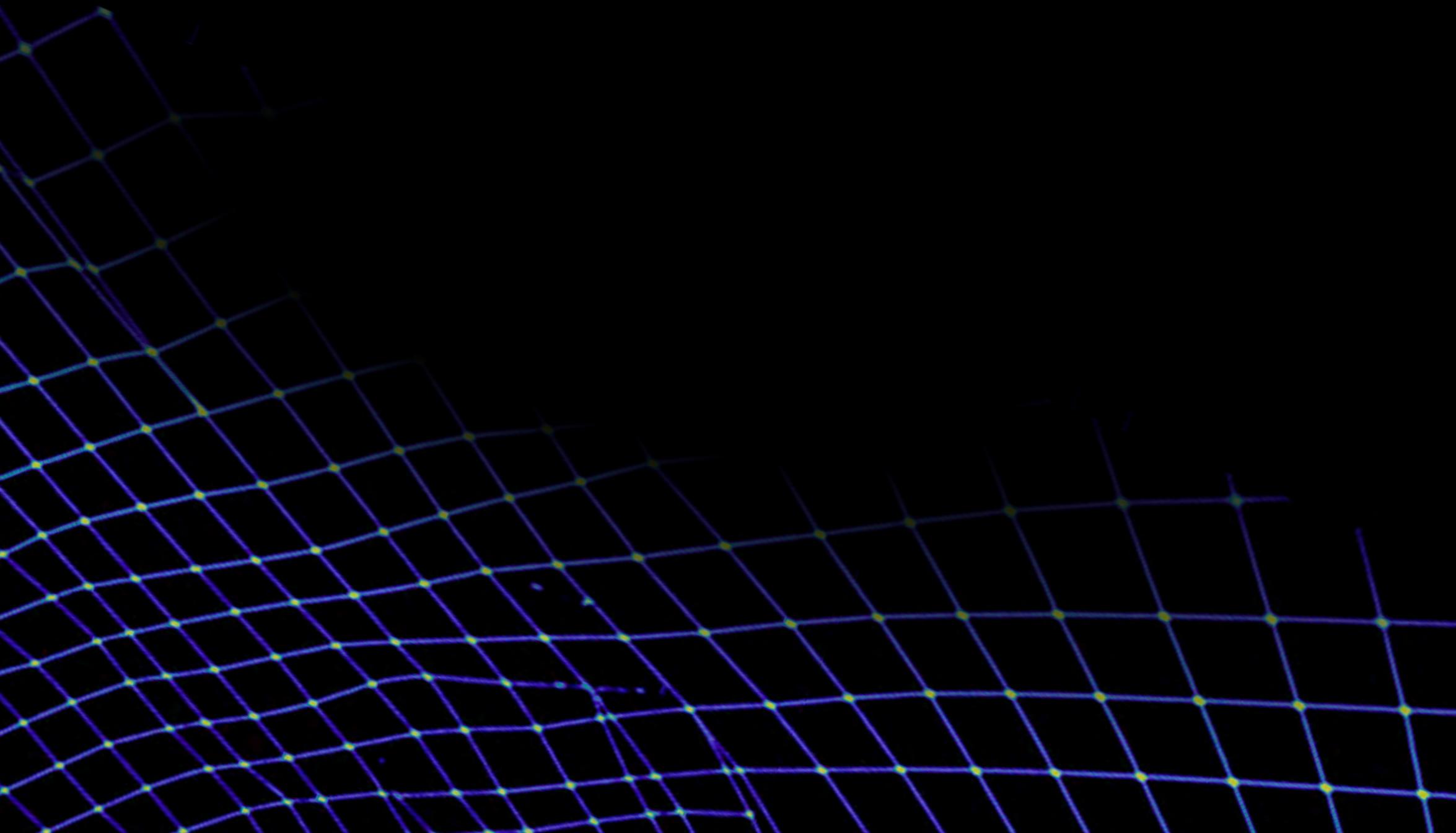
Creating a Revolutionary, Seamless Options Interface

Before, trading options with complex chains and matrices was tricky and confusing. Now, we are replacing it with a streamlined, visual interface.

This fresh design presents all the crucial information in a clear and intuitive way. It's a big upgrade that makes options trading easier for everyone, whether you're a beginner or experienced trader.



Protocol Roles

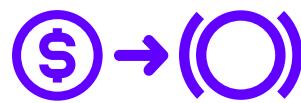


Traders



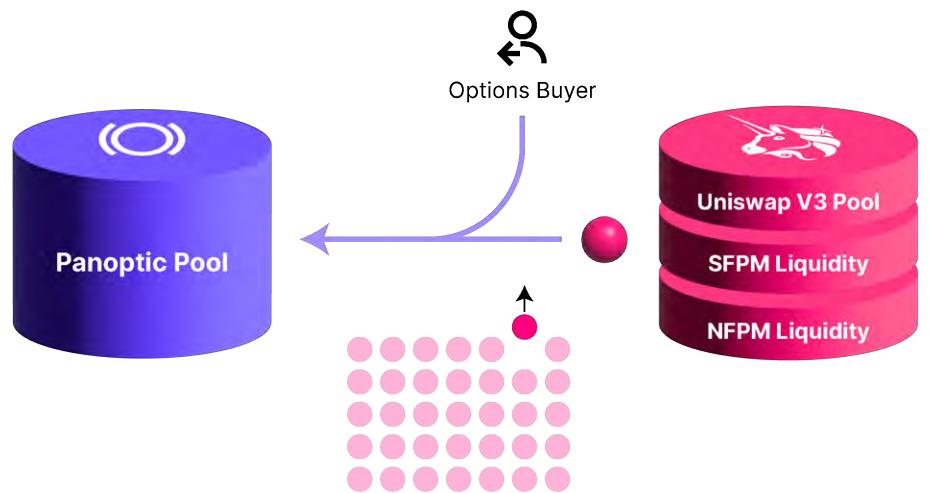
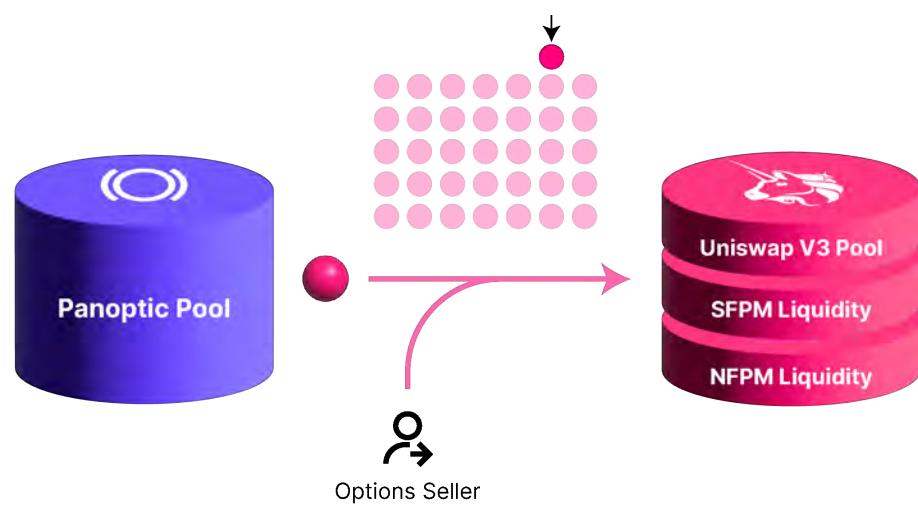
Selling an Option

1. Seller posts collateral.
2. Seller uses Panoptic to deploy borrowed funds as a concentrated liquidity provider position into Uniswap.
3. Seller collects Uniswap LP fee rewards + an additional 'spread' from buyers as 'streamia' (streaming premia).

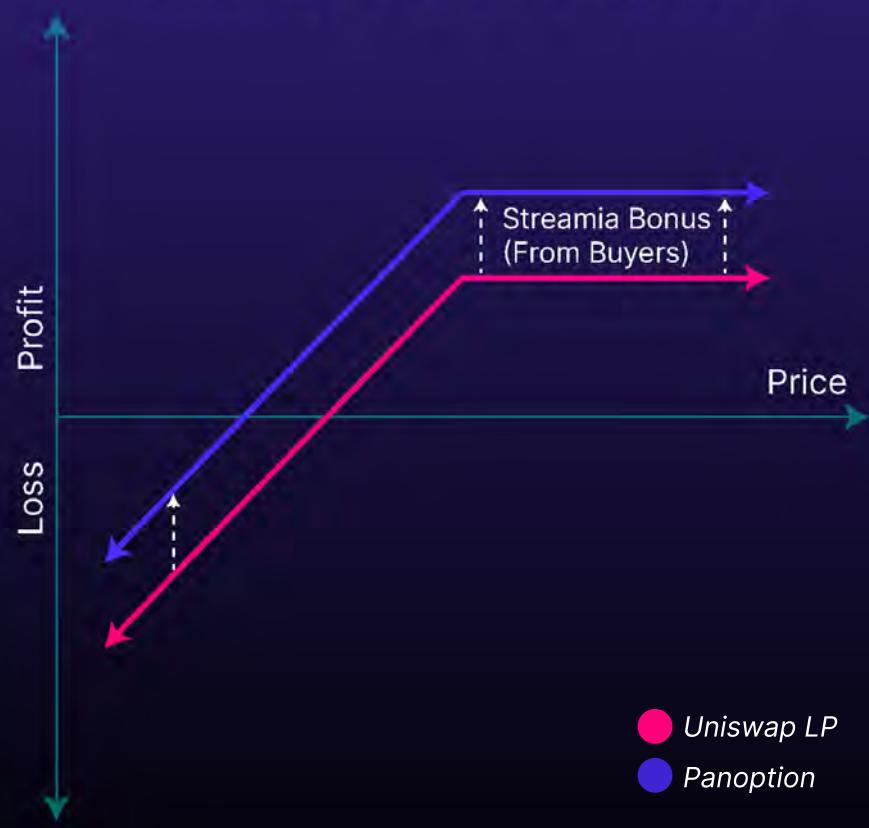


Buying an Option

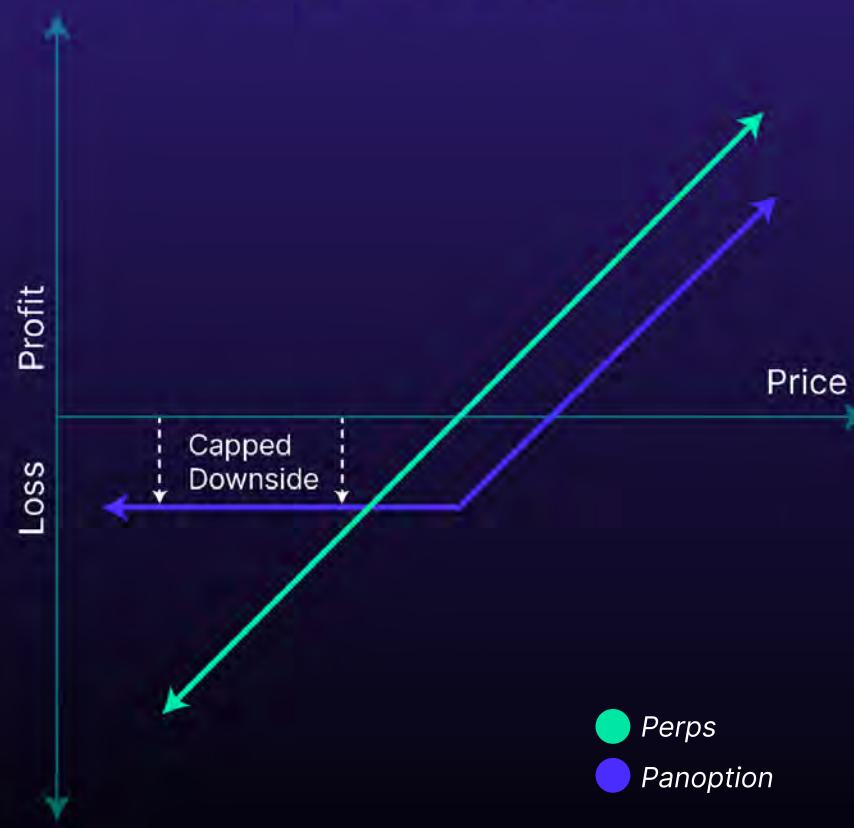
1. Buyer posts collateral.
2. Seller uses Panoptic to borrow an LP token from Uniswap and convert it to one of the underlying tokens.
3. Buyer continuously pays streamia to options sellers.



Uniswap LP vs Panoption

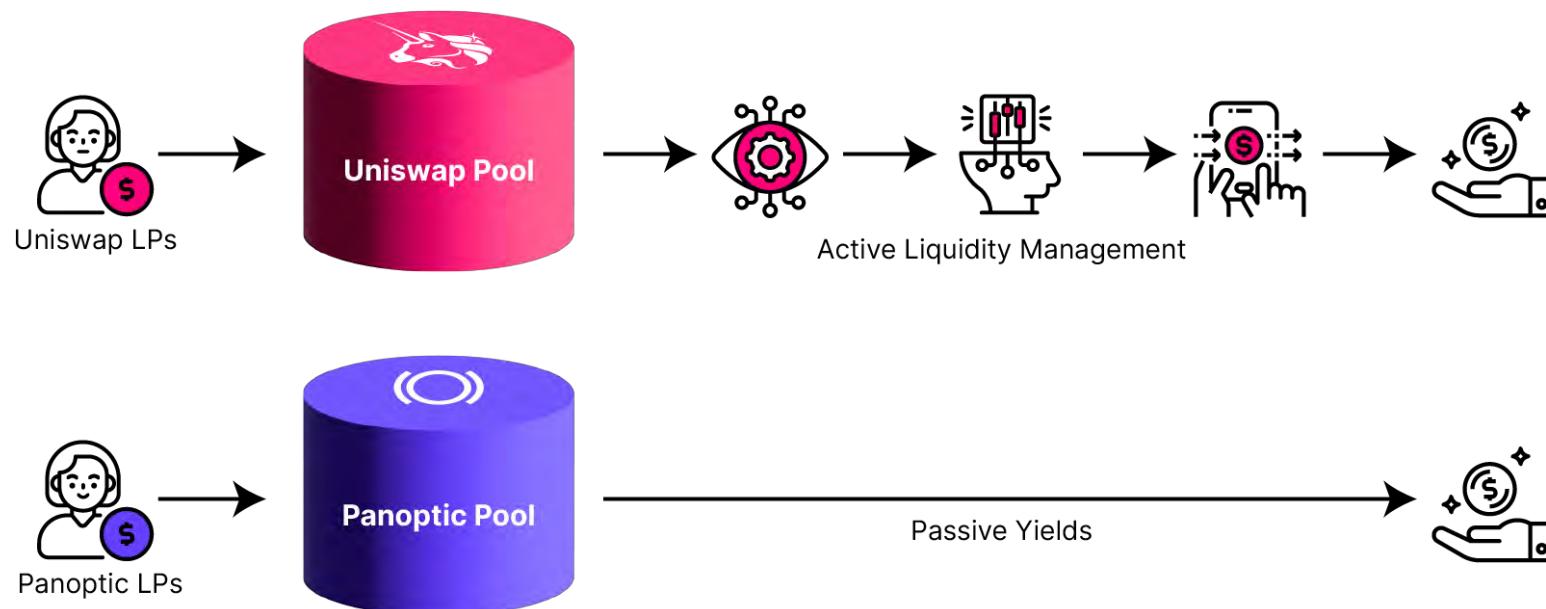


Perps vs Panoption



Liquidity Providers

A Panoptic Liquidity Provider (PLP or Panoptic LP) passively provides fungible liquidity of any token in any amount to a Panoptic pool to be borrowed by options traders. PLPs earn yield proportional to the volume of options traded in Panoptic.



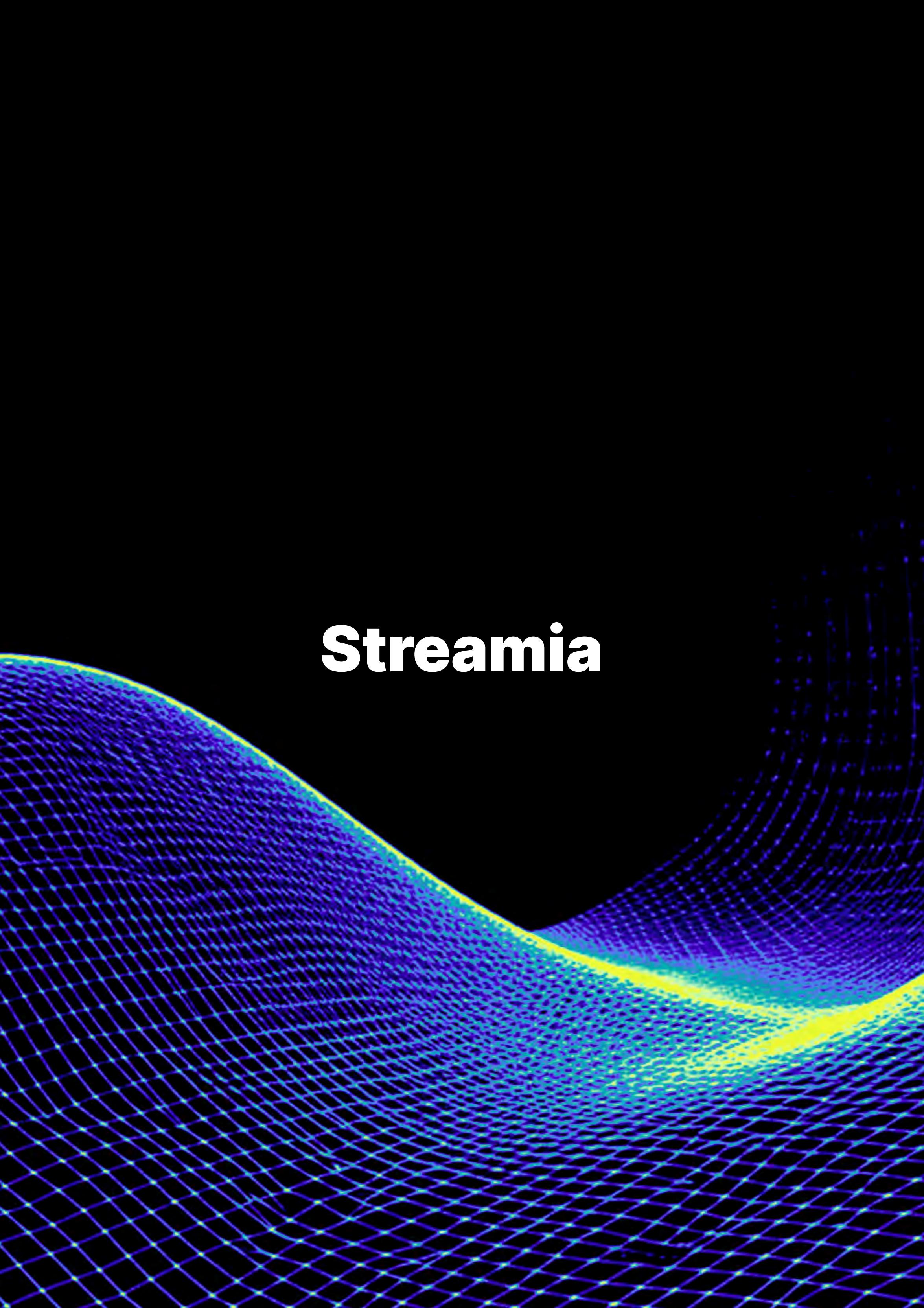
Uniswap LPs	Panoptic LPs
Impermanent loss	No impermanent loss
Double-sided (mostly)	Single- or double-sided
Must choose price range	No need to choose price range
Profit from spot trading volume	Profit from options trading volume

Liquidators

A liquidator ensures the health of the protocol by closing accounts whose collateral balance falls below the margin requirements. Liquidators are rewarded with a bonus for minimizing the protocol's risk of insolvency.



Streamia



What Does it Cost to Trade?

In Panoptic, the cost of trading options includes four components: streamia, commissions, swap fees, and gas.

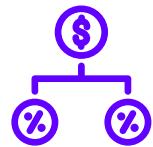


Streamia

Streamia, short for streaming premia, is a novel pricing method innovated by Panoptic. Unlike the options premia in TradFi, streamia offers a unique, zero upfront, 'pay-as-you-go' model.

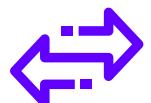
In Panoptic, option buyers owe sellers the streamia which is calculated as the Uniswap fee rewards that the seller would have earned had the seller's position not been borrowed plus an additional liquidity 'spread.'

Research shows that the streamia converges to the Black-Scholes pricing model, ensuring a fair pricing mechanism.



Commissions

A small, proportionate commission fee is charged each time an option is bought or sold. This fee is allocated to Panoptic liquidity providers as a reward for lending funds to traders, enabling undercollateralized positions.



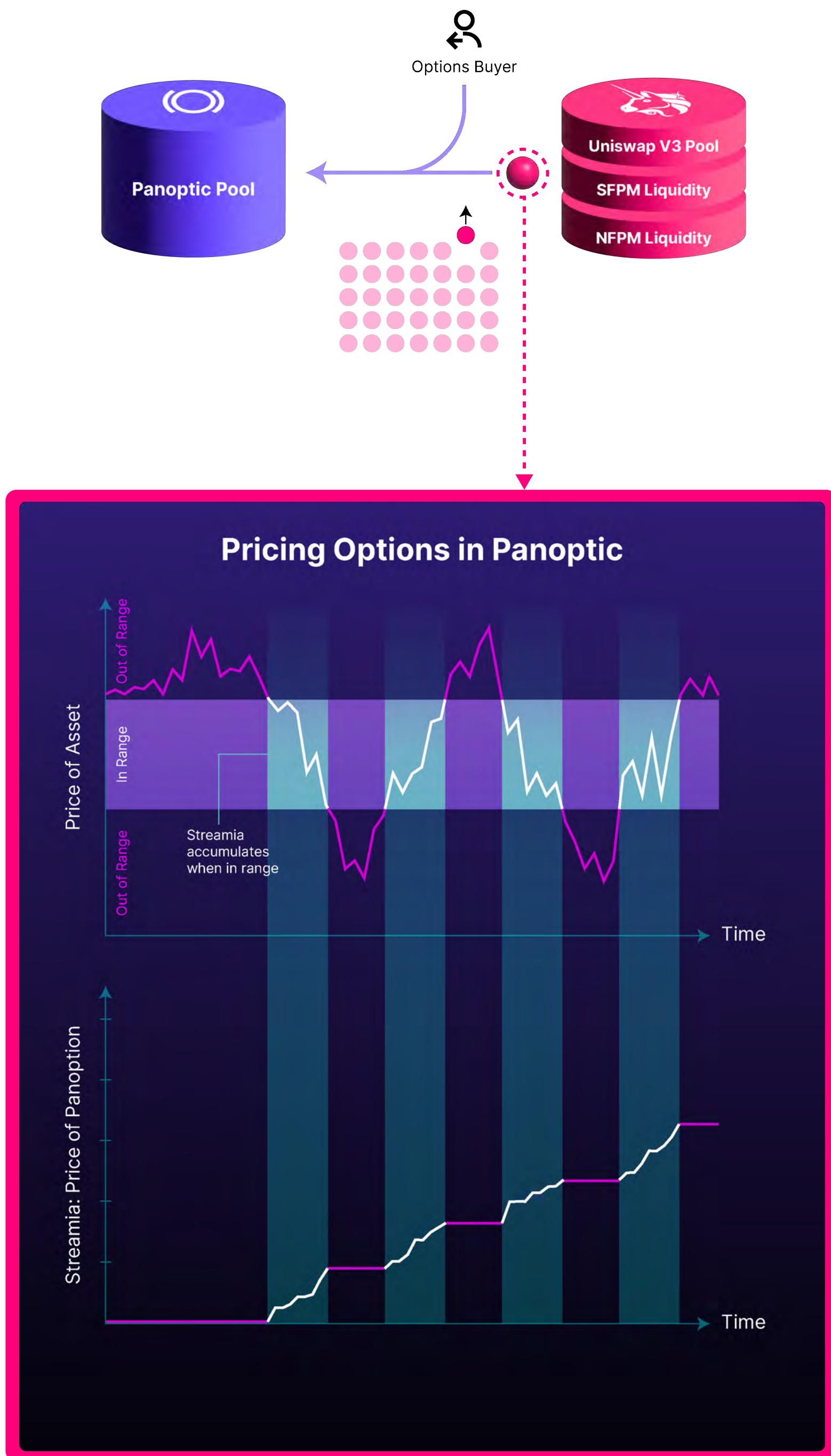
In-The-Money Swap Fees

When creating or closing an in-the-money option, the protocol charges a minimal swap fee to cover the cost of converting funds to the appropriate ratio of tokens. This guarantees that traders receive the correct options payoff.



Gas

The blockchain levies a fee for each transaction. This network fee ('gas') is charged to facilitate permissionless settlement of all transactions.



Traditional Options vs Panoptic



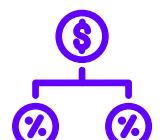
Streamia

Short for “streaming premia”, streamia is Panoptic’s novel pricing method for perpetual options. In traditional finance (TradFi), buyers pay sellers premia for options. In Panoptic, buyers pay sellers streamia for perpetual options.



Nothing Upfront

In TradFi, buyers pay sellers the full cost of the option upfront. In Panoptic, buyers pay nothing upfront. Instead, the premia accumulates over time as long as the buyer holds the perpetual option.



Streaming Payment

Unlike traditional options, Panoptic’s perpetual options are priced incrementally over time. Buyers make small, continuous payments to the seller for the duration in which the option is held.



Sellers Always Paid

With traditional options, sellers only receive premia when there are buyers. With Panoptic, sellers are always paid — regardless of whether the option is purchased or not.



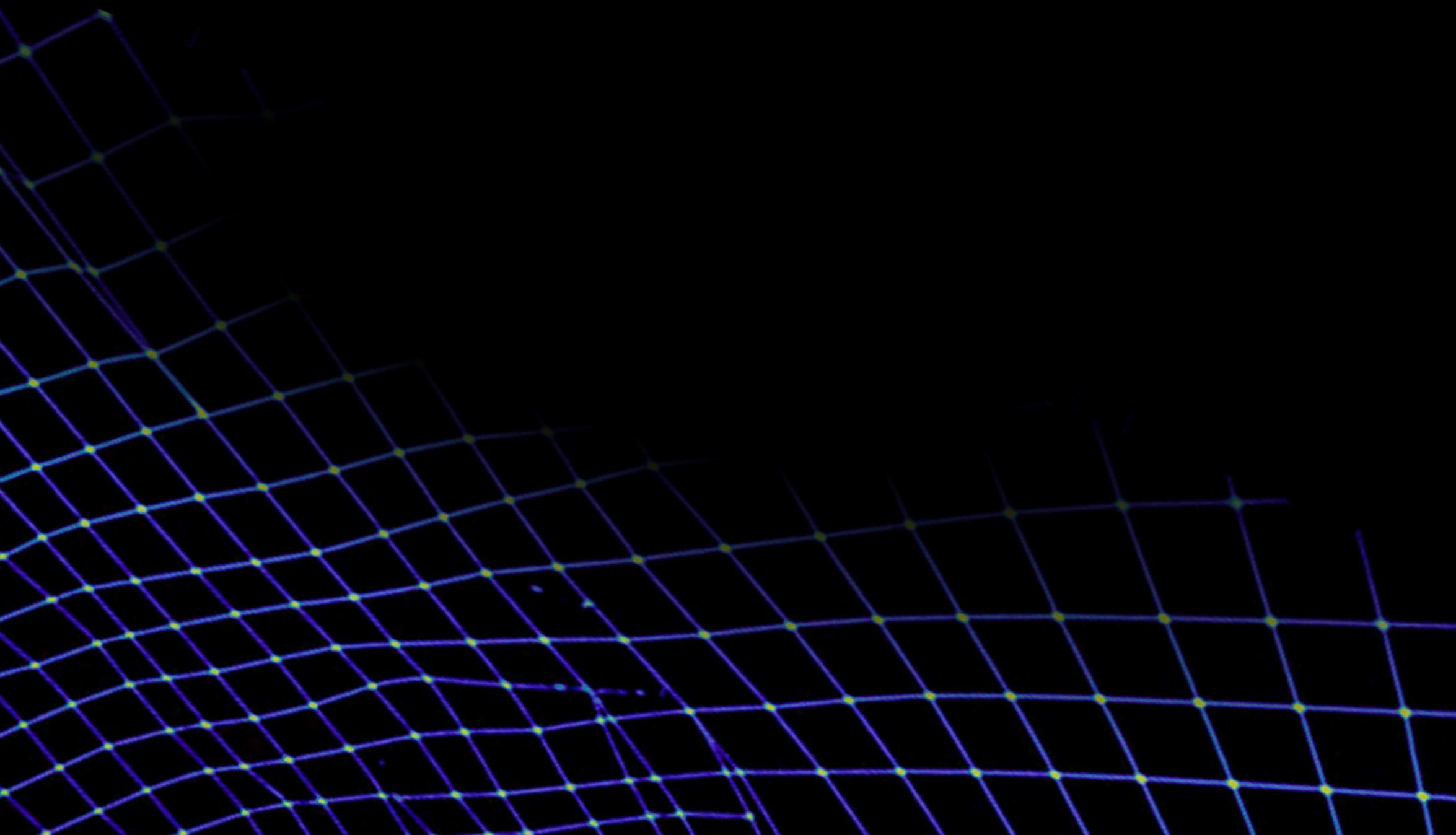
Liquidity Spread

In TradFi, professional market makers offer to buy ('bid') and sell ('ask') options at various prices on an order book, where the gap between the highest bid and lowest ask is known as the 'bid-ask spread'.

Panoptic, however, eliminates the need for order books and market makers, replacing the bid-ask spread with a spread based on liquidity utilization. As liquidity increases, the spread decreases, resulting in cheaper options.

TradFi	Panoptic
Premia	Streamia
100% Upfront	0% Upfront
No streaming payment	Streaming payment
Seller paid when someone buys	Seller paid regardless of buyers
Bid-ask spread	Liquidity spread

Pioneering a Holistic Audit Approach



Our '360 Audit': Securing Panoptic

Keeping your funds secure is our top priority. Panoptic is rigorously audited by world-class security firms, ensuring a fortified and reliable options trading platform in all aspects.

Smart Contract Security

We're ensuring the safety and integrity of our immutable smart contract code, using companies, tools, and frameworks such as OpenZeppelin, Trail of Bits, ABDK, Armur, and code4rena.

 OpenZeppelin

 TRAIL
OF BITS

 ARMUR



 code4rena

 ABDK

End-to-end Security

We're securing the full stack of our options platform, addressing potential vulnerabilities at every stage of the process, with the support of top-of-the-industry partners like OpenZeppelin and Arbitrary Execution.

 OpenZeppelin

arbitrary
 execution

Economic Security

We're safeguarding the game theory and economic incentives underlying our protocol, utilizing expertise from Gauntlet, Three Sigma, and Simtopia.ai to ensure a robust and safe ecosystem for participants.

 GAUNTLET

 SIMTOPIA

 Three Sigma

What's Next?

*Panoptic V1 revolutionizes options trading.
Panoptic V2 forges a derivatives platform.*

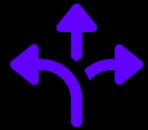
Panoptic V1

- Permissionless, oracle-free options trading
- Analytics page and risk dashboard
- Multichain

Panoptic V2

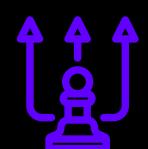
- Portfolio margin
- Cross-Chain
- Oracle-free derivatives infrastructure

Panoptic V1



Bringing Options to DeFi

In our relentless pursuit of revolutionizing the decentralized finance (DeFi) options landscape, our team is dedicated to delivering cutting-edge solutions that empower users and open new growth opportunities. The launch of our decentralized protocol will bring permissionless options trading to Ethereum and Layer 2s.

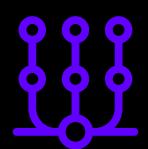


Advanced Features

We will introduce a comprehensive analytics webpage, enabling users to make informed trading decisions with real-time data and powerful tools.

Our risk dashboard ensures robust risk management, offering granular control for individual and portfolio-level positions.

By providing essential metrics on the protocol and portfolios, users have the flexibility to create precise positions aligned with their desired risk profiles.



Multichain

We will expand to multiple blockchains, Layer 2s, and concentrated liquidity market makers (CLMM). Our integrations will increase accessibility across a wide range of platforms, positioning Panoptic to be the prime venue for crypto options trading.

Panoptic V2



Enhanced Capital Efficiency

Capital efficiency will be taken to new heights with portfolio margin and cross-collateralization features. These features will allow users to optimize capital usage and access higher leverage, thus increasing their trading potential.



Cross-Chain

We will adopt a cross-chain framework to bolster interoperability and streamline liquidity aggregation across all blockchains and CLMMs. These cross-chain interactions empower users with an efficient and effortless options trading experience.



DeFi Infrastructure

Options will usher in a new wave of innovation in DeFi. Our perpetual options infrastructure will integrate with Uniswap v4, unlocking the unlimited potential to create accessible and customizable oracle-free derivatives.



**Proudly Backed by
Industry-Leading
Investors**

Our Partners

gumi
Cryptos

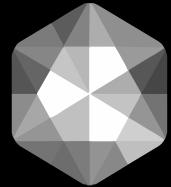
coinbase | Ventures



Jane Street



Uniswap Labs Ventures

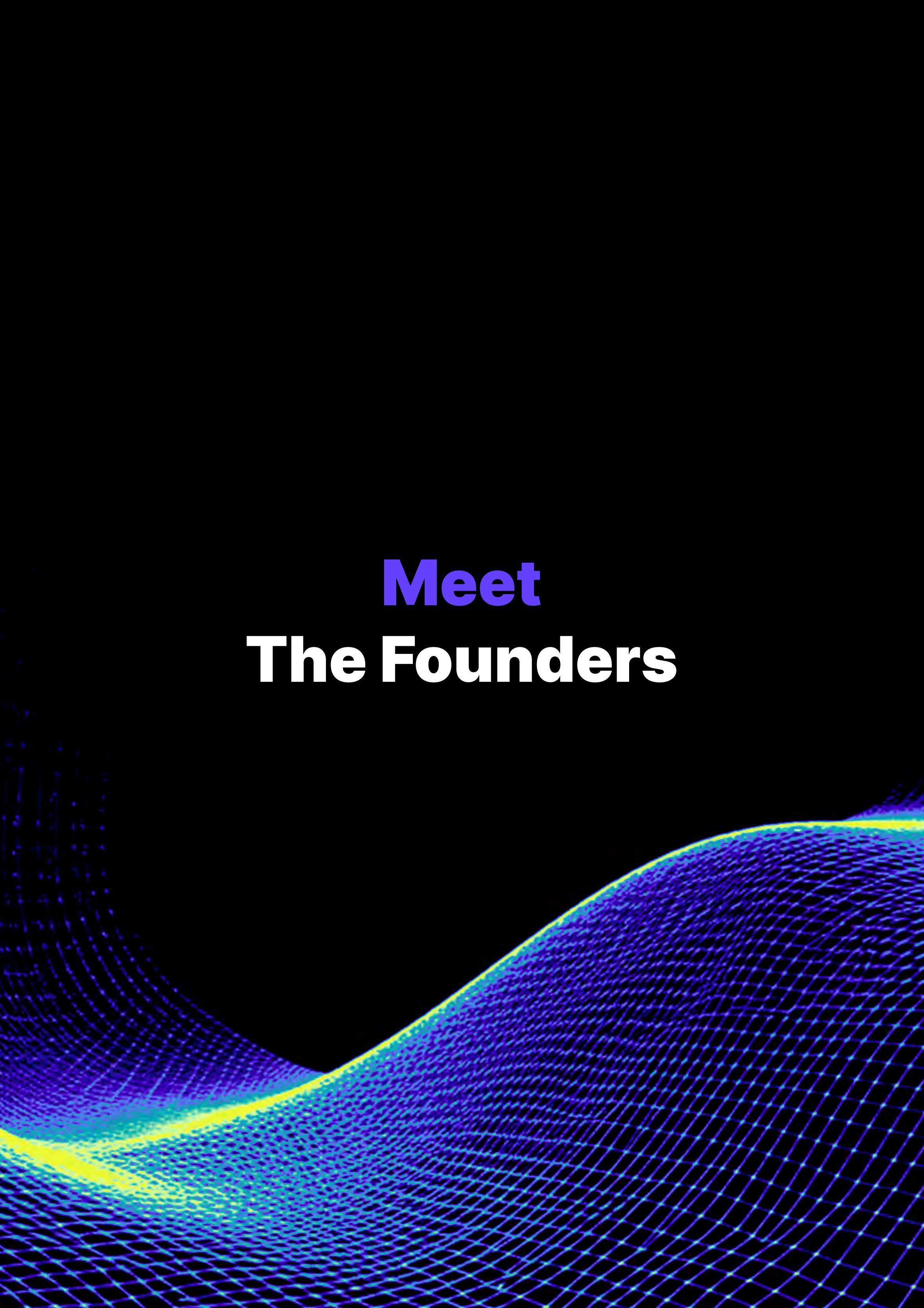


Hailstone
Ventures

DIVERGENCE Ventures



Meet The Founders



We started as **USERS** and became **BUILDERS**



Prof. Guillaume Lambert
CEO, Inventor, Co-Founder

Strategy and Technical

DeFi researcher, Inventor, Uniswap expert (+EV), Scientist, Educator, Coder, Polymath, Husband, Dad

Dr. Jesper Kristensen
COO, Co-Founder

Operations and Business

Authored multiple peer-reviewed scientific publications with hundreds of citations in large-impact journals

Author of Amazon top 3 FinEng book:
defibooks.org

Previous Positions:

Assistant Professor in Applied and Engineering Physics, Cornell University

Ph.D. in Physics, Princeton University
Postdocs: NYU, UChicago, Harvard

Previously:

Balyasny Asset Management,
Flatiron Health, GE Research

M.Eng., M.S., Ph.D. in Applied and Engineering Physics, Cornell University
(Henry S. Sack memorial award)

Get Involved

panoptic.xyz

Learn more about Panoptic: links.panoptic.xyz/all

References

References for Market Data

1. [Cboe Market Statistics](#), Chicago Board Options Exchange.
2. [Crypto Exchange Real Spot Volume](#), Messari, retrieved May 23, 2023.
3. [Global Options Total 24h Volume](#), Laevitas, retrieved May 23, 2023.
4. Lambert, Guillaume and Kristensen, Jesper (2022). “Panoptic: The Perpetual, Oracle-Free Options Protocol”.