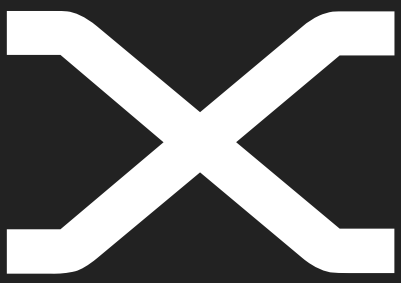


veax

LITEPAPER V1.1

1. INTRODUCTION

Trading in cryptocurrency tokens is overly complicated and unduly risky. Centralised exchanges (CEX) are folding, collateral is being held in opaque corporate structures, and loan entities are collapsing, locking client assets along with them. Trust is at an all-time low. Decentralised exchanges (DEX), the on-chain alternative to the opaque centralised exchanges (CEXs) are still offering an overly complex and hugely fragmented user experience, and still fail to support popular financial products such as derivatives trading.

Automated Market Makers (AMMs), or the standard DEX, have evolved from simple to complex processes, pushing nonprofessional liquidity providers out of the market. The original AMMs as envisioned by Vitalik Buterin and popularised by Uniswap in 2018 offered a scalable, durable and convenient way to conduct liquidity provision. What hadn't been foreseen was how popular they would become. At scale, we saw the drawbacks of these mechanisms, that fees haven't scaled with committed volumes. To solve these problems, we've seen the invention of Concentrated Liquidity Market Makers (CLMM). Whilst these give better performance for committed liquidity, they also add significant complexity to the operations of any liquidity provider [Heimbach, Scherten, Wattenhofer 2022], making it more difficult for smaller players to engage, and henceforth leaving the market to sophisticated players.

We look to address issues these with a range of tools, some to allow the traders to manage their own liquidity and take part in the same market as the more sophisticated players, others to improve these pools and other outcomes.

The next issue that faces cryptocurrency token markets is the performance of the derivatives markets. Particularly since the recent collapse of groups like FTX, the trust for cryptocurrency and token derivatives on CEXs, often with complex corporate structures and a complete lack of transparency of ringfence arrangements for customer collateral has significantly declined. Let alone the clarity of the behaviour on these CEX of their default funds and risk waterfalls, has significantly shaken traders' trust in the market. On-chain derivatives exchanges are still very limited and unsophisticated, mostly concentrating on perpetuals with simple margin models and collateral; they are not really competing with CEXs in terms of leverage, variety of instruments or performance. These need to be developed to offer a full suite of derivatives contracts, including options, all based on a TradFi-like portfolio risk-based leverage model with mature waterfalls and transparent on-chain collateral.

Cryptocurrency trading needs a mature DEX, with a long-term roadmap to address these issues, to provide on-chain markets without complexity for market participants. We provide here a roadmap to build a solid DEX solving the issues in providing liquidity to CLMMs and use this as a base to build a cross-chain DEX that supports derivatives trading.

2. OUTLINE OF THE PROBLEMS

AMM / CLMM liquidity provision issues

Liquidity Provision to traditional AMM has been superseded by the introduction of CLMM. The major improvement of AMM was a reduction in on-chain processing versus Orderbook style markets. It is well understood that Orderbooks, popularised in traditional markets, allow the creation of orders that only trade up to a certain price and are 100% matched at that price. Walking a sorted tree of limit orders within a smart contract scales with participation no better than O(n log n). It is quickly established that this approach doesn't scale on-chain. This making them precisely unsuitable for on-chain markets, and in particular more complex markets like derivatives (with significantly greater volume expected). Despite this some projects have moved forward with them on low volume, low fee blockchains, but they will still face these issues should they start to succeed.

The first generation of AMMs has proved more than an interesting experiment in how to bring matching onto chains but has not been without issue. The largest issue that we have seen, and for which there is a body of academic research, is the poor level of return for committed liquidity. The liquidity return in pools is proportional to the amount of liquidity committed to the pool, and for the larger pools, this larger commitment typically means a proportional poorer return. This further presents the problem of risk for this liquidity, with a change in price representing a significant loss in the relative asset value. This is often characterised as impermanent loss, incorrectly in the opinion of this author, as this really represents the risk of the liquidity provider being realised . However, the scale at which this can happen relative to the return in larger pools is a significant drawback of the original AMM model. AMM DEX really added a lot of value to the decentralised finance ecosystems, democratising access and massively increasing participation on the liquidity provision side.

The second generation of DEXs sees the introduction of concentrated liquidity. This innovation acted to allow a mechanism very similar to the original AMM model, but a range bound between two price points instead of across the entire range. This has since become the dominant methodology for AMM DEX. It allows liquidity providers a significantly higher level of control, to deploy capital closer to the methodology of an order book DEX, but with a processing capability more like that of an AMM DEX. This innovation, like the original AMM innovation, has a drawback. In this case, the drawback has been the complexity of liquidity provision. In the original AMM model, simplicity was the factor that drew participation. In trying to solve the issue of low returns relative to the locked-up liquidity, we see the addition of complexity that has driven away a lot of non-professional investors. This principal cause is that the workload that concentrated liquidity AMMs puts on the investor is substantially higher. The liquidity provider is required to constantly maintain their liquidity provision ranges to make sure that their offering contains the current swap rate and is therefore earning fees.

A lot of these investors had previously acted relatively passively and are not prepared to transition to the role of a full-time market maker. Thus, whilst successful as an innovation these concentrated liquidity AMMs have driven a large portion of the original AMM liquidity providers out of the market and made it more professional. This constituency has not left the market but has become homeless in the current round of innovation. Providing tooling for this group whilst retaining the high fee-to-committed liquidity ratio should be the central goal of the next generation of DEXs. This set of issues is well-known in Tradfi, it is understood that markets are too complex for professional market makers and passive investors to have the same access point to the markets.

For complications, it doesn't end here. For most of the AMM DEXs, including those that are concentrated liquidity in nature, the fee rate is set at the inception of the pool. Where the LPs do have influence, the rate is set based on the expected volatility of the market versus the potential returns, the more volatile the market, the higher the fee. Unfortunately for this DEXs volatility of assets change over time. As liquidity is applied to these pools the gravity of this liquidity prevents the setting up of additional pools as they will attract no fees. The literature on these subjects now suggests that most liquidity providers in the DEX model are making a loss, in no small part due to the fixed fee levels. The next round of innovation must solve this issue. Now the LPs are making money on the majority of pools from alternative sources, such as being paid in tokens at too high a rate to keep these markets running. This is not sustainable, LPs need to be paid for their contributions to the markets, and projects shouldn't pay disproportionately for this privilege, it depletes projects of their funds and requires LPs to negotiate for something that is not core to their business. It needs to change.

Where are the returns?

Another major issue that has formed around the growth of DEXs is the lack of clarity on where returns are to be made, simple volatility/return ratios are difficult to determine. Data on historical returns from pools is not published. Analytics around DEXs are in their infancy. For, a passive investo,r without the simplicity of the original AMMs, making a determination of how and in what manner to commit assets is much more difficult. In the traditional financial markets, they solved this issue by creating the fund management industry.

Illiquid tokens, and price formation

A further problem that is observable in the market is the concentration of liquidity within a smaller number of cryptocurrency tokens than would be ideal. There are many valid projects for which there are few or no liquidity pools. For a similar number, there are AMM pools, but with such a small amount of transactions price manipulation is prevalent, and it is extremely difficult to know where the fair value for these tokens is. This problem is well known in financial markets, where liquidity is often concentrated within major futures or benchmark contracts, be those on the run bonds, or commodities like frontline Brent. There are mechanisms to allow price formation in illiquid markets that don't have the inefficiencies and risk overheads that a 24/7 AMM does.

Derivatives

The development of derivatives within the Defi environment has been stunted. There have been a few simple perpetual supporting DEXs but no futures or options markets. These perpetual DEXs have offered some simple mechanisms, creating credit from one pool to another to allow basic optimisation of P&L. Given the outsize valuation of these DEXs, it is very clear that the market is desperate for an on-chain derivatives solution. This is in part due to the issues that we are seeing within the CEX marketplace within cryptocurrency. FTX is the latest to fail, but the similarity in their issues with those of some of the loan entities, such as Celsius, is striking. Lacking transparency, they traded well until they didn't. Collateral was opaque, and as they are being unwound, it is becoming rapidly clear that they don't know how to correctly price derivatives risk. The term risk waterfall is broadly missing from the lexicon of these entities. The mechanism provided within the perpetual DEXs won't scale for mainstream derivatives; options risk doesn't have the same exposure as outright contracts. Similarly in perpetual contracts, the relative risk of different contracts is not 100% correlated. This means that whilst real-time P&L can act as credit, leverage should not be linear. Leverage should operate in the same way as the futures market and the relative risk of the portfolio should be offset. The Defi market is desperate to see an alternative to CEX on-chain that offers proper portfolio risk with a clear process.

3. HOW DO WE INTEND TO SOLVE THE PROBLEMS

Adaptable Liquidity Pools

At the centre of our proposals are our adaptable liquidity pools. The core of these offerings is to change the structure of liquidity contribution. Instead of creating the form of liquidity contribution at the point of the creation of the smart contract, the smart contract is flexible for the form of contribution. This includes the form of the contribution (i.e. ranged orders, singles-sided liquidity, even limit orders) and importantly it includes the ability to set the fee on each individual contribution.

The combination of these goes a long way to reduce the impact of fee/volatility problems in the DEX for liquidity providers. By allowing the liquidity providers to set the rate with each contribution to a pool, remove these contributions and replace them with contributions with a differing fee the compensation takes on a market rate. This market rate reflects the volatility in the instrument and can be adjusted by the LPs to the appropriate rate. This overcomes the issue for LPs in getting appropriate rewards. It seems like a small change, but it's a big impact small change. It allows LPs to get suitably rewarded and therefore to strike better deals with projects. Resetting this dynamic to make fee rewards a market function is a correct way forward.

Our adaptable liquidity pools are designed for us to extend the format that we can contribute liquidity, to bring all this together in a single pool, different liquidity contribution algorithms different fee levels, all in the same smart contract. This is all designed to allow us to prevent liquidity from fragmenting. No matter how many forms of liquidity we develop or the LPs chose to use, no matter how many fee levels, and different ranges are in place we operate one pool for the pair. Then when a swapper comes looking for the rate to conduct a swap, we have the single source of liquidity for that swap as the basis.

Liquidity Management

Our second innovation is to focus on reducing the complexity for non-professional investors. Our goal is to allow them to provide their token assets into a liquidity management pool that will reduce the complexity of managing these assets. This pool will perform the actions that they would perform and continuously manage those actions. The selection of which pairs to place trades token into, the ranges that these orders should be placed in, and the fees that should be applied.

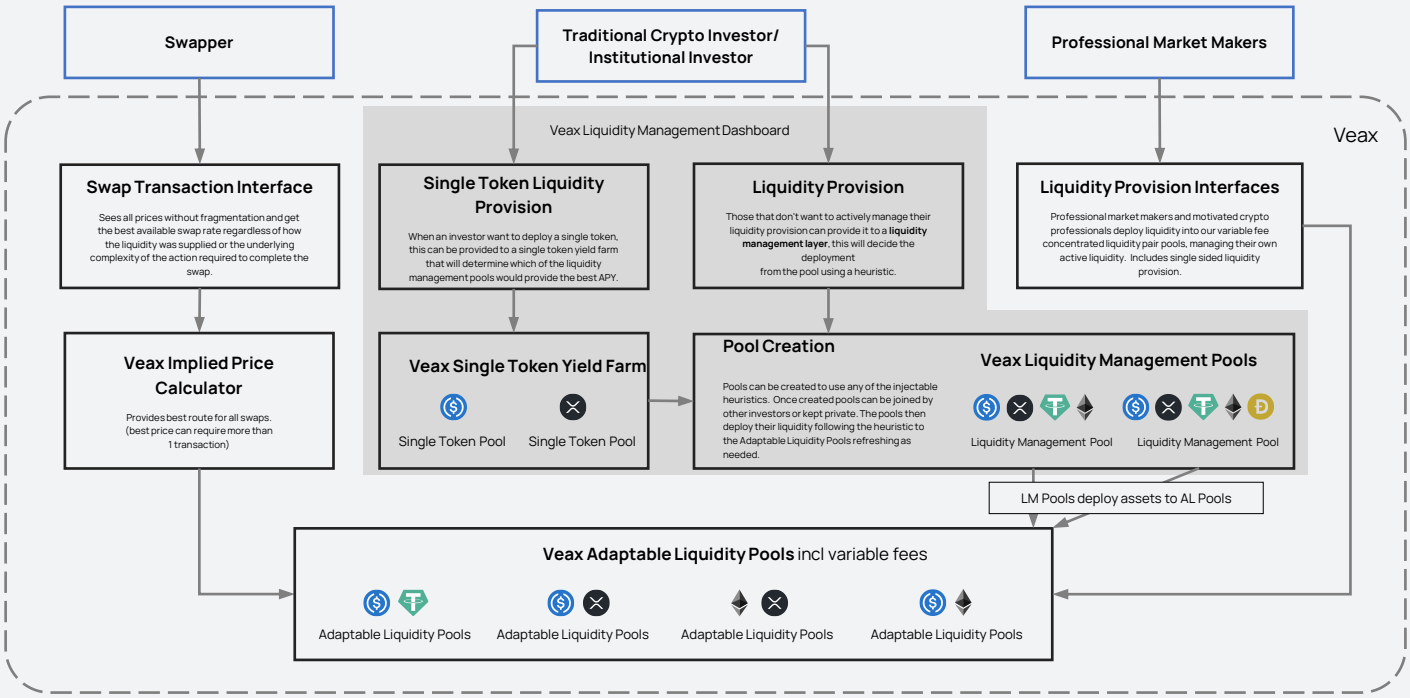
Our goal with this is to provide the Defi equivalent of a funds management layer in TradFi. We will offer simple algorithms, heuristics, which will make decisions in the same manner as index trackers for the distribution of tokens. We will offer a number of these that can be selected on the creation of the pool. It will make a distribution of the assets into the adaptable liquidity pools.

The core of this is the rebalancing, to compensate for changes in volatility or price, to adjust the range or the distribution. This will not be solely based on time, rebalancing is based on the change in the rates acting like a ratchet to prevent the pool being drained by minor price fluctuations.

This system will also solve the biggest issue of the non-professional investor community, keeping their assets active in concentrated liquidity pools, such as our adaptable liquidity pools. This significantly reduces the load for investors, and once again allows them to actively take part in the Defi market.

Further, we don't envisage that we will have a monopoly or even the best ideas on how this can be operated. We will introduce the ability for community-created heuristics to be used, where the creator will share in the accruals due to the heuristic. Prior performance of the heuristics will be presented.

Collectively these innovations bring the community full circle, non-professional investors are able to participate again, via a familiar approach transferred from Tradfi.



Auctions

Addressing illiquid assets requires something new, so we introduce auctions. Our auctions remove the burden on a project to provide 24/7 liquidity via an AMM. An auction is a regular process that allows price formation and exchange of assets. On a periodic basis ranging from a few times a day to monthly an auction can be called on an asset. These auctions will be structured as one asset vs a stablecoin. At the time of calling the auction orders can be placed in a limit order fashion for this asset in stablecoin terms. Orders can be placed at any point up to the auction time. Indicative clearing prices that show where the auction will settle should it execute. Then at the allotted time, the auction processes and swaps are settled at the auction rate. This allows the opportunity to provide liquidity without significant effort for a liquidity provider. It allows holders and the project to get a clear price determination and to exchange assets at a fair rate.

Further, once the auction is conducted we will allow the continued trade of assets at the auction rate, which is referred to in the commodities markets as follow-on trading. The market can be assured that the rate was set in an open and robust manner and offers to swap assets are happening at a fair rate.

Lastly, these auction processes will be used in significantly more liquid markets to set a rate. These rates will be used as the settlement rate for the derivatives markets creating a clear and open process for this settlement.

We believe these Auctions markets will get mass market adoption, the blockchains are full of projects without effective AMM markets, and these projects need these solutions. This will provide tooling that the market is desperately in need of, that Defi desperately needs and that is required as a part of building a secure derivatives marketplace.

Derivatives

We will launch derivatives markets on-chain.

Derivatives markets are all about collateral management. Positions taken in the market need to be tightly controlled with margin calculated in a manner that prevents the clearing pool from running out of collateral. It is about governance and oversight; leverage comes with risk that needs management.

We will deliver this in two rounds, an initial round, like that in the existing perpetual DEXs. Allowing the offset of positions between different DEX using a semi-fungible token to manage the use of collateral. P&L gains in some will credit the pool, and P&L losses will debit the pool. At all times, the positions can be exited against the liquidity in the pools. The liquidity in the pools remains locked if their outstanding open interest (positions) against a pool equals the amount in the pool, guaranteeing that liquidation can always occur. This will allow simple perpetual contracts to be brought swiftly on-chain. Auctions can be used to anchor these at regular intervals.

The second phase is the development of a full on-chain derivatives market with full transparency over assets. We will operate a separate collateral pool. Each participant that wants to act in the on-chain DEX must provide collateral into their own collateral pool. This collateral is then exchanged for a semi-fungible token (SFT) pool. Collateral will only be accepted in a couple of assets, stablecoins. The SFT will be denominated in these terms.

The format of these pools is that trades will be conducted against this SFT pool which will be denominated in stablecoin. We will offer futures and options pools that can be set up for any asset. The amount of SFT utilised by the position will be determined by the risk ratio set at the governance level. This will be determined by a VaR calculation on the asset. Those assets without history will be set by correlation or by a conservative evaluation. The risk controls will be operated by the DAO via an oracle. This effectively gives the leverage that will be enabled on a pool-by-pool basis.

The further, and important aspect is that pool utilisation varies by the portfolio risk of the position, for instance, a call and a put at the same strike act to offset the risk against each other. A broader portfolio of options positions, across different expiry dates and strikes, buys and sells, as well as futures and related assets all add together to produce a collective portfolio risk. Each position affects the utilisation.

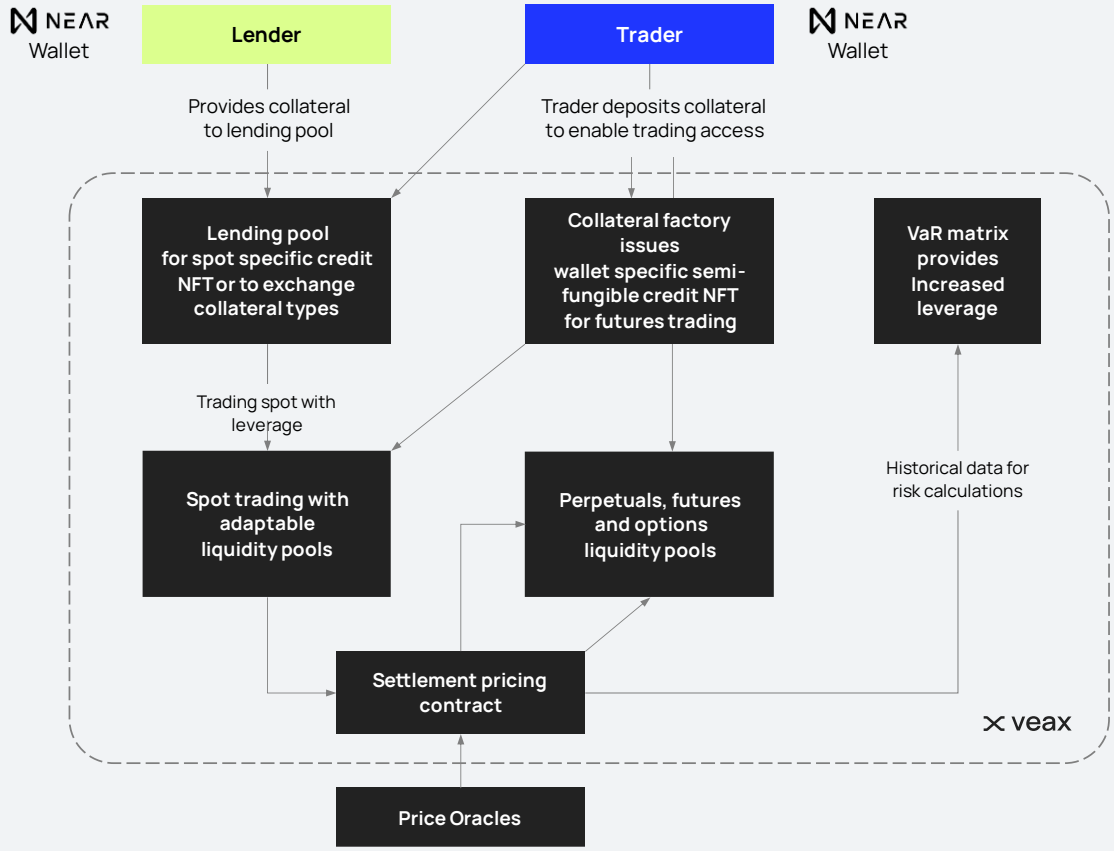
Derivatives positions will be settled against external prices source, either oracle based or preferably auction-based.

Whilst this takes us a long way forward, we see this as only the beginning. The market scales via the collateral pool. The work to scale this focuses on this. Initially, our risk protocol will be more conservative, with historical volatility, and correlation, with a haircut. We want to improve this and that means a reserve pool. We will build this over time with fee contributions. Additionally, we will offer the ability for entities to become sponsor entities with a contribution to this default fund, with a minimum size and scaled by the amount they sponsor they can then underwrite other entities that want to trade, bringing their client base to the defi derivatives protocol for a fee share. This is how we scale defi derivatives.

This takes us further into asset lending. Many investors will have collateral that isn't applicable, either not stablecoin, or non-qualifying. We will build and offer collateral lending pools, where investors can upgrade their assets to access the derivatives market, for interest and fees.

Cross-chain

We will extend our platform to go crosschain, we believe that these features are broadly applicable and want to bring them to as wide an audience as possible. Our first chain Near is a solid technical choice with a robust and vibrant community whilst the Defi aspect of Near is underdeveloped and looking for solutions. USDC is native to Near and one of their target blockchains. For this chain to be successful it needs the form of innovation we are bringing and expect strong support from an eager Near community.



Governance

Veax's development will be executed by the Board of the entity, which is established in Switzerland. This entity will directly or indirectly further the growth and development of the open-source DEX and the surrounding community as well as the ecosystem.

The Foundation or AG Board will appoint a Governance Committee with two to five members to oversee the governance and decentralization process - and the tokenomics, including Veax fees.

To ensure that Veax develops according to the envisioned roadmap, up until Veax V4 version release, the Governance Committee is 100% appointed by the Veax Foundation or AG Board until that time.

Until decision-making is full decentralization, VEAX token stakers will assume a central role in suggesting features for the Veax DEX through the Governance Committee, whilst the Board will act as a guarantor that the Veax principles of compliance-first and the Public Deed of the Veax Foundation or AG are adhered to.

The Foundation or AG Board will retain the role as supreme body of the Foundation after full decentralization, and the governance committee will continue, appointments to the governance committee will be voted through by the VEAX token stakers.

Until the Veax Foundation or AG is set up in Switzerland, Tacans AG will execute on behalf of the Foundation or AG including for sale of VEAX tokens or rights for future VEAX token sales and use of proceeds for the development of the Veax platform.+

Swapper

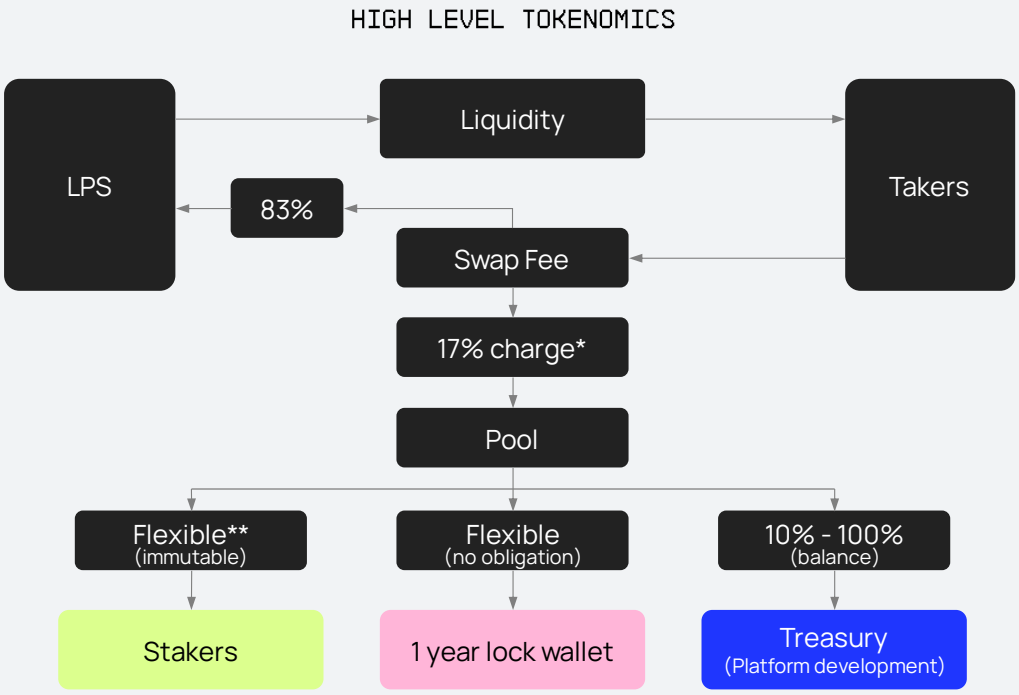
The other half of our user base are the swappers. They, in general, have one primary concern – how to get the best price. One of the principal reasons that we have architected our adaptable liquidity pools and our liquidity management in the form that we have is to prevent fragmentation of liquidity. This gives great access to the best prices for outright swaps, but this is not the end of the story. We also operate implied price calculators to generate the best routes if the best price for a contract is not via the outright swap, and smart order routers construct these pairs, or chains, of trades to produce the best rate. With a clean interface, we will always offer the swapper the best rate.

Automated Arbitrage

Pools are correlated and opportunities for triangular arbitrage arise regularly in defi. Within the Tradfi market, there are many tools to conduct these trades, we are developing this for defi, where any user can seed gas to an automated arbitrager. This automated arbitrager will operate within defined boundaries and accrue any tokens it can. This assists the market by keeping the separate token markets inline with each other.

4. TOKENOMICS

Our core tokenomics are focused on making sure those that provide liquidity are suitably rewarded. Liquidity Providers set the rate at the point of contribution, and then when people perform swaps the fee is redistributed as per the diagram:



We then have a split of the remaining fees, our expected splits are 45/45/10 between the stakers, lock wallet and the treasury. We also will reserve the right to burn the lock wallet tokens rather than put them back in circulation if this is in the interest of the stability of the token price. This will be controlled by the DAO.

5. ROADMAP

	FEATURE ROADMAP KEY DEFI FEATURES AND TIMINGS	DECENTRALIZED GOVERNANCE HOW WE TRANSITION FROM CENTRALIZED TO A FULLY FUNCTIONING DAO	FUNDRAISING TOKENS AND CASH
R&D Q3 2022	• Research and development • Publish roadmap	• Defining governance structure	Seed
V1 TESTNET Q4 2022	• Release of MVP • AMM and simple UI • Integrate Near wallets • Adaptative Fees • Technical whitepaper published • Academic paper describing capital efficiency	• Build and publish version 1 of Veax docs • Community building kick-off	Private placement
V2 Q4 2022	• Price ranges and concentrated liquidity • Advanced deposits and withdrawals at protocol level • Single Sided Liquidity • Limit Orders • Auction Windows • Marketing & community building kick-off		Go-live on Mainnet
V3 Q1 2023	• Off Chain Liquidity Management • Automated Arbitrage • Smart Order Routing • Trade Registration		• Public sale • Listing of token on minimum one tier1 CEX
V4 Q2 2023	• Spot Specific Credit Pools • On Chain Liquidity Management • Implied Price Engine • Single Token Liquidity Farming • Trade registration with additional chain support • Charting • Orderbook View • Collateral Pools • Perpetual Markets • Lending Pools for Spot Margin Trading	• Start roll out of governance voting – voting for features proposals • (Timing TBC)	
V5 PUBLIC GOVERNANCE Q3 2023	• Protocol governance ready for token holders • Front Running Protection • Project Tooling for incentive support • Options Markets • Futures Markets • Prime Brokerage • Collateral Swaps		
Q4 2023	• Aurora support • Gas fees in multichain, making the platform truly cross chain	• Q4 2023 Voting for pairs to be shown on Veax frontend • Q4 2023 Voting for LP commission reward	
Q1 2024	Future features to be decided by public governance voting		