Mira Finance: Building the Next Generation of Index Management on Aptos

Mira Labs

Abstract. One of the most common questions asked by new entrants to crypto is what to invest in. As the Aptos blockchain prepares to launch its mainnet, Mira Finance is building a DeFi platform that makes investing in cryptocurrencies simple. Mira will help investors gain exposure to tokens on Aptos, Ethereum, Avalanche, Polkadot, Solana, and other digital assets. This is accomplished with a peer-to-peer service where investors (buyers) choose how to allocate their funds, and managers (sellers) strategize using Mira investment pools. As Mira evolves, it will grow to be the go-to platform on Aptos for both investors and investment managers when exploring portfolios, testing strategies, researching, and learning. This will create the foundation for Mira as an onramp to other DeFi products on Aptos, including but not limited to: staking, swap farming, liquidity farming, auto-investing, strategy trading, mining pools, and launchpads. The platform will be multichain to cater to the wide variety of already existing DeFi tools. Notwithstanding, the P2P service model will benefit from economies of scale and decreasing transaction costs.

1. Introduction

Mira investment pools will allow investors to explore portfolios of people whom they trust; in an environment where they can test strategies, research, and learn what they should invest in. Mira will enable people to manage their accounts and portfolio distribution without the need for a centralized exchange, complicated API tooling, or excessive blockchain transactions and gas fees. This creation of a sharing economy will enable creators and individuals to promote their strategies, share with their friends, and compete.

Mira is designed to benefit two of the key observable trends in finance over the past few years: personal autonomy in finance and a sharing economy. Enabling people to manage their accounts and interests is a key factor in building a portfolio protocol - Mira gives users jurisdiction over their portfolio token distribution with unparalleled ease of use. The concept of using groups to mitigate costs and arbitrage information sharing has been explored, such as in liquidity pools, but using the community to promote a peer-to-peer service for investment management has yet to be implemented. By creating a sharing economy where users are incentivized to promote their strategies, share with their friends, and compete, Mira embodies an environment that takes advantage of the same momentum to propel crypto Twitter,

Reddit, and other forms of community-driven trading. Mira is built to benefit ecosystem users - as opposed to cutting a margin of trades or charging fees, the native Mira token is built into the ecosystem so that profit is community driven. To specify, token holders will benefit from value appreciation as dApp and trade volume increase, because these will increase token utility and drive incentive for $MIRA as a tool in governance - see '$MIRA as a Governance Token'.

2. Built on Aptos

Aptos is a new Layer 1 blockchain that is faster, more secure, and more scalable than other L1 blockchains that are live today. It was built by former Meta engineers, who developed the Move programming language that is specifically made for the blockchain. Mira Finance is built on Aptos because Aptos aims to solve the blockchain trilemma: decentralization, security, and scalability. This will help the underlying purpose of crypto come to fruition and propel mass adoption for both individuals and enterprises.

Decentralization

Similar high-speed and low-cost blockchains like Solana have a high barrier to entry to become a validator. A node on Solana requires tens of thousands in assets and hardware. This hurdle for average consumers has limited the network to around 1800 validator nodes in total, making it subject to overloads and shutdowns. Aptos has partnered with companies like Google Cloud, whose technology allows Aptos nodes to be set up in less than 15 minutes with hardware as simple as a MacBook Pro. When the Aptos Developer testnet launched in March 2022, it reached a peak of 18,000 full active nodes, making it the largest known proof-of-stake node community running today.

Security

The Aptos consensus protocol is deemed to be Byzantine Fault Tolerant (BFT), which refers to the Byzantine General Problem. Imagine a group of generals who must decide together on battle plans. They suspect someone in the group is a traitor and provide false information. Their 'dilemma' is how to make a plan given these circumstances. In decentralized blockchains, the Byzantine General Problem refers to participants, particularly validators, who must work to confirm or deny transactions correctly without the ability to implicitly trust one other. This is a common source of potential blockchain exploits.

Aptos's BFT protocol keeps the network running smoothly, regardless of the actions of one validator, while also maintaining world-class speeds. Aptos uses a reputation system to update validator rotations

and synchronizes voting using “pacemaker.” This system fully validates transactions in less than a second (a measurement typically called ‘time to finality’).

Aptos also has numerous features that protect end users from having their accounts exploited. Those famous stories of users who lost their crypto because they couldn’t remember their key are a thing of the past. Aptos has built new, secure methods for key recovery, as well as key rotation systems that prevent fraud.

Speed

Aptos will bring speeds that can be adopted by the next one billion users. During its test net, the network hit speeds of 160 thousand transactions per second (TPS) - and fees of less than a penny per transaction - making it the fastest blockchain to date.

Blockchain	Ticker	Time to finality	Max TPS	Current TPS
Solana	SOL	2.34s - 46s (different tests)	120.000 (710.000 on a 1 GB network)	2.000
Aptos	N/A	less than 1s	160.000	1000 (in testnet)
Ethereum	ETH	78s (6 confirmations)	45	12.9
Bitcoin	BTC	60m (6 confirmations)	7	3
Avalanche	AVAX	0.15 (record) 1.3-3.4s	4.500 per subnet	4.4
Internet Computer	ICP	1-2s	11.500	3000
Fantom	FTM	1s	4.500	7.3

3. The Aptos Pulse Index ($API)

The Aptos Pulse Index is a digital asset designed to track Aptos ecosystem token performance and will be the easiest way to gain exposure to the expanding layer 1. $API will be a capitalization-weighted index consisting of 7-10 of the most popular DeFi tokens available on Aptos. The index will allow for 1-click exposure and rebalancing customizability.

Expanding Indices on Mira

Aptos networks like the Pontem Virtual Machine have developed a fork of the Diem Move Virtual Machine, which can be deployed to other modern chains like Polkadot, Cosmos, and Avalanche. Aptos compatibility with other networks will allow Mira Finance to create a diverse selection of indices from multiple blockchain networks and provide investors exposure to a wider selection of crypto assets. Move will be interoperable with Ethereum's virtual machine, which is why we believe that Aptos will be the first blockchain to catapult cryptocurrency toward a multi-chain future; opening the gates for traditional institutions and traditional investors to invest in passive crypto assets that are not limited to individual networks or wrapped tokens.

Current Index Market

Companies such as BlackRock ($7.4T AUM) & Vanguard ($6.2T AUM) are the largest asset managers in the world with trillions under management. In the US, more money is invested in passive funds like ETFs and indices than in active funds, with over $11 trillion invested in the asset class. With trillions in wealth tied to passive investments, traditional investors and asset managers are seeking similar options in crypto.

4. MIRA Investment Vehicles:

Below are the vehicles that make use of the Mira Investment Pool, where a manager can strategize and oversee funds that are allocated by investors into a single, unique wallet on Aptos. This process is arbitrated to a single smart contract for a given transaction - see How the dApp Works.

Index Funds

Mira Index Funds are baskets of tokenized assets - this can include any asset built on the variety of supported chains. A wide array of investments is implicated - stablecoins, exotic assets like artwork and sports teams, traditional assets like bonds and real estate, even stocks and funds - revolutionizing the nature of investment portfolios. There will be a limit set on the maximum number of tokens allowed in a given index fund, which will be decided upon constraint testing on Aptos. Users will be able to see a list of live indices created on Mira, sortable by size, performance, recency, management fee, and other metrics. There will also be risk scores tied to verified accounts based on year-to-date performance. An important thing to note is these portfolios will remain customizable after they are published. Some of the

options for index funds include management fees, equal vs custom weighting, rebalancing periods, minimum contribution levels, and strategy backtesting - these are elaborated in section 5.

Hedge Funds

Mira Hedge funds will provide access to complex trading, portfolio construction, and risk management techniques for users and institutions to improve portfolio performance. Mira Finance will introduce leveraged, derivative, and short-selling applications through an automated market maker connected to the network.

Treasury Funds

For Institutions and high Net-Worth individuals, Mira Treasury Funds will provide select users (based on a minimum deposit threshold) portfolio management tailored towards privacy and high volume trading. Features such as permissioning, whitelisting, and KYC will be prominent. These funds are a derivation of Mira Index Funds.

5. How to Create a Portfolio

The first way to create a portfolio is by modifying one previously published on Mira; when browsing through recommended portfolios, such as the Aptos Pulse Index and top trending strategies, there is an option to ‘customize’. The other method is creating a portfolio from scratch. The detailed procedure is documented at docs.mirafinance.io.

6. How to Invest in a Portfolio

Users will likely find portfolios they want to contribute to by searching through leaderboards, looking at trending strategies, viewing specific user profiles (such as well-known traders or celebrities), or being referred by family and friends. Upon finding a feasible portfolio, a user can choose to allocate their own funds by choosing an option titled ‘contribute’. The procedure is documented here.

7. How the dApp Works

Transaction Model:

All interactions with the Mira dApp platform are recorded on the Aptos blockchain, using one of three transaction types.

- Mira Wallet Transaction
    - After connecting with an external account, a wallet is created within Mira & used for deposit/withdrawal
- Mira Pool Transfer
    - In order to facilitate scalable investment management/group trading, pools are created with unique wallets, and transfers to/from personal Mira wallets are triggered by specific trade actions
- Mira Trade Strategy
    - When a manager creates a custom strategy - either a broad strategy for an index fund appropriation or a dynamic strategy for a hedge fund - this strategy is stored and associated with the manager's ID

Furthermore, the database is organized with two imperative key-value dictionaries to store pool info and account info, as well as various arrays to maintain trade information, naming, and user transaction validation. The codebase also contains various functions that can initialize new dictionaries, dictionary fields, and new functions, making the Mira platform more dynamic so that functionality can be added as development scales up without the need for forking.

Interaction:

When a user opens the Mira site, they are able to see the leaderboards for top-performing portfolios and other resources provided under Mira finance. However, they do not see any information specific to their personal account. Upon connecting a supported wallet, this changes. If the wallet has not yet connected to Mira, a new user profile is created on the platform, along with a unique wallet - done by searching through [Accounts]. This user is assigned a default name, which can be easily changed. If the wallet has already connected to Mira in the past, the frontend information will be updated based on the database storage of all information related to that user, including their wallet address, portfolios under management, each portfolio strategy, portfolios invested in, and respective portfolio equity - stored within Account[user_name]. From the Mira wallet, any user has the option to deposit funds from their external wallet or withdraw if funds are available on Mira. This unique wallet is considered a Mira wallet, even

though it only exists on the Dapp at the moment. In the future, we plan to integrate Mira wallet so that it works externally from Mira finance and makes migration to other DeFi tools on Aptos smoother. For now, depositing and withdrawing to the Mira wallet are intermediary steps that are not always necessary.

To create a pool, a user must set all the parameters for the pool, and name it. This unique pool is stored within Pools[pool_name]. When this happens, another unique wallet is created to store all of the funds sent to this specific pool. The manager field is set to the creator's wallet address, and if this ever changes, such as when the manager withdraws their share, management is transferred to the Mira platform. Initially, the pool only has one investor, that being the manager, who owns 100% of the portfolio. As time goes on, the shares in Pools[pool_name]. Investors change, and the values are updated to reflect who owns what. Furthermore, the index allocation and all strategy settings are stored so that they can be changed at any point in time.

To invest in a portfolio, a user must contribute funds. They can either do this by sending funds from their Mira wallet or from their external wallet. Regardless, contributions are routed through the Mira wallet, because this is where rewards will end up upon withdrawal. When new funds enter a Mira investment pool, a series of calculations run to account for transaction and management fees before determining the new share for each investor in Pools[pool_name].Investors. This share is always stored as a percentage of the pool, and when the user withdraws, this percentage is exchanged for $APTOS. Then, if that amount is greater than what was initially invested (before accounting for fee-loss), the difference is exchanged to $MIRA, and the user receives their rewards distribution in the native token.

8. $MIRA As a Governance Token

$MIRA is the governance token that presides over Mira Finance and will be used to vote on changes to the Mira Finance DAO. Investors and institutions can use $MIRA to govern the DAO by voting for and against internal governance proposals on an Aptos version of Snapshot. $MIRA holders may vote in smart contract upgrades to Mira, vote on new Mira products, vote on the allocation of the Mira treasury, what is offered in our indices, and more. They can also buy and hold $MIRA to utilize meta governance power in other DeFi communities tied to indices on Mira Finance.

What is Meta-Governance?

Meta-governance refers to the ability of $MIRA token holders to vote on governance proposals for other protocols. Governance tokens held within the $API index can be used to vote on their respective proposals. This will cover platforms pertaining to lending and borrowing, yield aggregation, and decentralized exchanges (DEXs)

$MIRA derives value by being a governance token used for voting on improvement protocols to Mira Finance. This helps make decisions on how the DAO spends its treasury and for meta-governance proposals relating to underlying tokens held in $API (and future index products).

Social Media Incentive:

In order to incentivize experts and influencers, a percent of Mira's governance token will be set aside for rewards for traders if a specific ROI is achieved in the form of an airdrop. By launching a social media advertising campaign, we can onboard users through influencers who will launch their portfolios for their followers to see and learn from.