Almanak: Democratizing Access to Financial Intelligence

Version 1.0

Abstract

"A new, AI-dominated financial system emerges, and humans aren't equipped to be a part of it."

The financial landscape is rapidly transforming, driven by the rise of artificial intelligence (AI) and the expansion of decentralized finance (DeFi). Yet, this progress disproportionately benefits institutions with access to advanced tools, leaving individual participants struggling with complexity, fragmented infrastructure, and unequal opportunities. Almanak's agent-centric platform directly addresses these disparities, empowering users to build, train, and deploy advanced financial strategies through institutional-grade AI Agents.

Almanak combines best-in-class strategy infrastructure with cutting-edge agentic capabilities, enabling users to ideate, optimize, and execute financial strategies with unparalleled precision. Its non-custodial, secure, and permissionless architecture ensures that users maintain full control while leveraging powerful tools traditionally available only to institutions. By abstracting away the complexities of DeFi and democratizing access to AI-driven financial intelligence, Almanak redefines participation in decentralized markets.

This litepaper details Almanak's core components and phased roadmap, from its blockchain simulation environment to its fine-tuned AI Agents, designed to onboard millions of users. Almanak is not just leveling the playing field—it is revolutionizing financial participation for a new era of decentralized, intelligent finance.

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1. Introduction

As the financial world evolves into a complex, AI-driven ecosystem, traditional approaches to market participation are becoming increasingly inadequate. Users of on-chain applications specifically have to deal with the following problems:

- **Increasing complexity & information overload**: As of November 2024, there are now over 300 public blockchains hosting financial applications, with over 4000 indexed DeFi protocols on these chains[1]. In addition to the sheer number of protocols adding external complexity, each protocol's internal complexity has also grown. Users (specifically human users) cannot be expected to navigate all of these chains and venues in search of the best place to meet their financial needs, with each protocol having a different UI and UX, while taking into account smart contracts and economic security for each of these protocols.

- **Technological acceleration**: The speed of technological progress, currently mainly driven by advances in AI, overwhelms users of decentralized financial products. While big institutions have the resources and knowledge to adapt to these rapid changes, individuals without those same resources are left with a feeling of anxiety and an inability to compete with them in financial markets.

- **Execution challenges**: For individuals manually executing on financial strategies, execution of these strategies can be time-consuming, prone to errors, and can lead to suboptimal outcomes. Additionally, the intricacies of interacting with various smart contracts and decentralized applications demand a deep understanding of each platform's unique interfaces.

- **Lack of end-to-end tooling**: While some tools exist today that can automate financial strategies for mass-market users, most of them lack broad support for chains and protocols, and instead focus on a single DeFi ecosystem. Those with a broader support for venues often lack the ability to adjust strategies and triggers unique to a specific venue. Others force users to give up custody of their funds, require individuals to self-host strategies on their own hardware, or expose its users towards being front-ran by malicious actors.

All of these factors lead to the following, sub-optimal conditions for individuals in financial markets:

- **Inefficient market participation**: These issues reduce user engagement, lower returns and drive market inefficiencies. Many protocols willing to "overpay" for liquidity go undiscovered by the masses, leaving valuable opportunities on the table.

- **Asymmetrical competition**: As institutions rush to leverage recent advances in AI to extract more value from financial markets, individuals will be the ones losing out in this battle. Failing to harness the same newfound power due to a lack of tooling, the gap between the individual and the financial institutions is set to be larger than ever. Individuals will not be in a position to compete with these entities.

Given that the current state of DeFi and the centralizing powers of AI favor larger players over individual participants, a question appears: is there a way to empower the individual user to more effectively participate in financial markets?

Such a solution would need to be fully integrated, and solve for the following:

- **Abstraction of chains, protocols & execution**: as highlighted above, one of the major problems is the sheer amount of DeFi and CeFi venues and infrastructure. Abstraction layers need to be introduced if individual users are to effectively leverage strategies across all of them.
- **Financial intelligence**: institutions house more financial intelligence than any individual can. For an individual to effectively compete with these entities, they would need to have access to a source of financial intelligence that can help them reason about the best way they can participate in the markets.
- **Privacy**: while all transactions on-chain are public, financial strategies that operate on a competitive edge should remain private only to the owner of the alpha.
- **Permissionless & non-custodial**: If it is to empower individuals, this solution should be open to be used by all (sticking with the ethos of DeFi). On top of that, it should also not custody funds on behalf of users. "Not your keys, not your coins".
- **Security**: to guarantee privacy and safety of user funds, the solution should implement both on- and off-chain best practices to protect users from engaging with fraudulent or economically insecure DeFi & CeFi applications.

1.1. Agents in financial markets

Over the last few years, the rise of AI, and particularly the general intelligence displayed by large language models (LLMs), has captured the attention of the crypto community. More specifically, "AI Agents", which are supposed to be software entities capable of performing tasks on behalf of their human owners, are set to revolutionize the way in which humans interact with the world. On top of that, crypto infrastructure, with its permissionless and programmatic nature, is hailed as the perfect rails for these Agents to transact value with the rest of the world.

The above prompts the question: could Agents play a role in leveling the financial playing-field and allow individuals to more effectively participate in financial markets?

1.1.1. Agent Definition

Before we move on to answer that question, it is important to come to a common understanding of what an Agent is, and how it is different from a bot. A good definition should describe its characteristics, but refrain from defining technologies being used by it. Almanak proposes the following definition:

> An Agent is a software application that can:
>
> - **extract information** from a **changing and unstructured environment**,
> - **reason** about that information in the context of its objective,
> - discover patterns in the data and **learn** to leverage those patterns,
> - **perform actions** that its owner did not even consider.

This definition clearly shows how Agents are different from current-day software, or "bots". Bots expect their environment to always be structured in the same way, can only perform static reasoning, and their actions are pre-defined by their creators.

Agents on the other hand can take input from constantly changing environments, reason about the usefulness of new information in relation to their goals, learn fundamental truths about their environment, and eventually perform any action with the tools they are given.

1.1.2. Agents as the Solution

If we now take the concept of an Agent and apply it to financial markets, we can quickly see how Agents can assist humans in navigating their complexities and facilitate their effective participation. "Financial Agents" combine fundamentals from financial automation, like algorithmic trading and strategy automation, with the quantitative reasoning abilities and service discovery capabilities of Artificial Intelligence (see Figure 1).

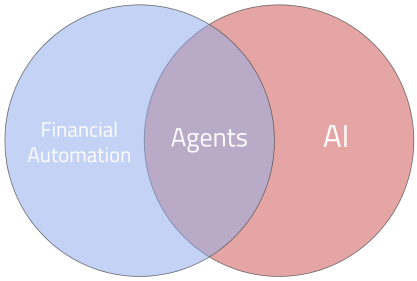

Figure 1: Financial Agents live on the intersection of Financial Automation and AI

To combat the problems described in the Introduction section, Almanak proposes an agent-centric platform to empower its users to build, train, and manage advanced financial strategies using institutional-grade AI Agents. Almanak has set itself the mission of onboarding millions of Agents onto decentralized financial markets, and democratizing access to artificial quantitative intelligence in those markets. By doing so, Almanak addresses the aforementioned challenges of DeFi fragmentation, technological acceleration, asymmetrical competition in financial markets, and inefficient market participation.

2. Almanak Platform

Almanak's agent-centric platform empowers its users to build, train, and manage advanced financial strategies using institutional-grade Financial Agents. It achieves this by creating and combining the following two components:

1. **Best-in-class strategy infrastructure** to enable the ideation, creation, evaluation, optimization and deployment of financial strategies in financial markets.

2. **Agentic infrastructure** to allow Financial Agents to assist with, and take over, specific steps in the financial strategy workflow.

We will go into detail on each of the components, after which we will describe what the resulting workflow looks like on the Almanak Platform.

2.1. Strategy Infrastructure

By most measures, Almanak's proposed Strategy Infrastructure is similar to the classical quant stack one might find in a hedge fund. Its aim is to provide tools to facilitate the following workflow:

1. **Ideation**: conceptualizing the purpose and scope of a strategy.

2. **Creation**: implementing the strategy using the Almanak strategy framework.
3. **Evaluation**: verifying the functionality and performance of the strategy.
4. **Optimization**: enhancing the strategy for better efficiency and effectiveness in current market conditions.
5. **Deployment**: facilitating an execution environment for execution of the strategy.
6. **Monitoring**: tracking the performance and health of the strategy post-deployment.

However, the Almanak strategy infrastructure differs from the typical quant stack in a few key areas.

2.1.1. Differences with the typical quant stack

Compared to typical quant stack, Almanak infrastructure provides additional and necessary functionalities, especially in the areas of simulation, deployment, and non-custodial fund management.

The first major difference is in the realistic evaluation and testing of strategies. Simply testing financial strategies on price feeds, as typical quant stacks do, is inadequate in DeFi. Factors such as transaction broadcasting, the mempool, transaction ordering (MEV) and gas / account complexities introduce an additional set of factors that need to be taken into account when evaluating a strategy. On top of that, the composable nature of DeFi means that a strategy might make use of an arbitrary combination of financial logic. To account for the additional layer of complexity in DeFi, Almanak's strategy infrastructure makes use of a powerful blockchain simulator. Instead of merely simulating price feeds, this simulator simulates the blockchain's state machine. This makes it capable of testing complex financial strategies, while taking into account all of the intricacies that blockchain infrastructure introduces. This is the only way to effectively test a financial strategy in DeFi.

Another major difference between Almanak's strategy infrastructure and a typical quant stack is the way that strategies are deployed. While most strategies today are being executed in-house (either in institutional infrastructure or self-hosted by individuals), privacy of strategy alpha introduces a challenge. Almanak proposes the use of Trusted Execution Environments (TEEs) as a way to solve this. TEEs guarantee that the contents of a strategy cannot be accessed by the host infrastructure, giving users of Almanak strategy infrastructure strong guarantees that their alpha remains private.

The final difference is the way in which user funds are being handled. As the platform needs to be non-custodial while still allowing Agents to autonomously execute strategies, it introduces the need for an intricate authorization layer. Almanak solves this problem by introducing Almanak Wallets, a fully-on-chain smart account with built-in, on-chain permissions built on Safe Smart Accounts[2] and Zodiac[3]. This allows platform users to delegate just the right amount of permissions to their Agent executing the strategy, creating a trustless setup between the user and their Agents.

2.1.2. Infrastructure components

To facilitate the described workflow, the Almanak strategy infrastructure consists of the following 4 components:

- **Financial markets monitoring tools** – enabling users and their agents to efficiently monitor market conditions. This allows them to find alpha for new strategies, and respond swiftly to changes based on anticipated market shifts.
  The tools consist of aggregators and indexers of on-chain data, as well as direct connectors to on-chain and off-chain markets.

- **Development suite** - the Almanak Strategy Framework and auxiliary tools allow users and their agents to ideate, prototype and build new strategies. This includes connectors for on-chain protocols, datasets to train on, and an elaborate blockchain testing environment to test the strategies in a realistic blockchain environment.

- **Optimization infrastructure** – an infrastructure that enables users and their agents to rigorously test and refine their strategies before deploying them on-chain. They can create forked blockchain environments and replicate essential dapp logic and user behavior, allowing them to closely simulate live operational conditions. To identify the most profitable approach under current market conditions, users and agents can run many thousands of strategy configurations in the optimization infrastructure to fine-tune them and achieve optimal performance.

- **Deployment infrastructure** – the infrastructure enabling users and agents to securely and privately deploy strategies, protecting against risks such as frontrunning and MEV. Strategies and agents are executed inside of TEEs, with agents executing transactions by sending transactions to selected self-custodial wallets, vaults and centralized exchanges in a fully non-custodial and permissionless manner.

These four components combined allow for both human users and agents to develop, test and deploy competitive financial strategies in the crypto space. In the next section, we will see how financial agents will assist, and over time replace, the work of users of the Almanak platform.

2.2. Agentic Infrastructure

The Agentic Infrastructure aims to enable Agents, which we defined in the Introduction of this paper, to assist with the strategy workflow. It gives users of the Almanak platform access to financial

intelligence that has quantitative and qualitative reasoning abilities, and is intimately familiar with the Almanak workflow and with what the user is trying to achieve.

At the core of the Agent is an LLM that has been finetuned for quantitative reasoning and coding. As of the writing of this paper, state-of-the-art LLMs are already overtaking the average human on certain IQ benchmarks[4]. At the same time, benchmarks have been created to assess the quantitative reasoning abilities of LLM models, and some models are already scoring over 90% on these tests[5].

The Almanak platform aims to leverage these LLM-powered Agents to assist users in the following ways:

- **Automated monitoring of financial markets** to identify new opportunities and spot potential risks. This means users can use their Agent to monitor more venues than they manually ever could.
- **Automated strategy selection and creation based on natural language prompts**. Users can give a high-level description of their desired strategy, and have their Agent automatically create this strategy for them to use, or select the closest existing strategy to be used. This includes personalization of strategies based on the user's investor profile.
- **Automated venue integration**. Blockchain protocols such as DEXes, money markets and others can be automatically indexed and made available for use in strategies. We have already seen the first venues indexed automatically using natural language[6].
- **Automated strategy testing**. When a new strategy has been implemented, the Agent automatically defines the optimal way to run functional and efficacy tests in the Almanak blockchain simulator.
- **Automated strategy monitoring**. Finally, Agents monitor strategies automatically, confirming they work as expected. It can also step in and wind down the strategy in case market conditions change, or take defensive action in case of black swan events like de-pegs.

With the capabilities described above, platform users will be aided by Agents in the same way that programmers are aided by LLMs today. As users become more comfortable with Agents, and as Agent capabilities improve over time, more tasks will be overtaken by Agents, to the point that humans will be almost completely offloaded from quantitative tasks.

Almanak is actively experimenting with the finetuning of open-source models such as Llama 3.1, Code Llama, Zephyr, and Mistral, refining them to fully leverage the capabilities of the Almanak infrastructure. Almanak expects to launch the first Agents in Q2 2025.

2.3. Almanak Workflow

Combining the Strategy Infrastructure and the Agent Infrastructure, we can now fully describe the

resulting workflow that the Almanak platform enables:

1. **Ideation**: Agents help with investigating strategy ideas of users, or automatically surface relevant alpha and trends discovered in the markets. They can also take higher-level instructions like "I want to invest $500,000 into a yield-generating retirement portfolio" and suggest strategies based on these preferences.
2. **Selection and Creation**: Agents automatically select or create strategies based on the information generated in the ideation phase. They take feedback from users and update the strategies based on their input.
3. **Evaluation and Optimization**: Agents automatically test and optimize the strategies in the Almanak blockchain simulator. Thousands of simulations show whether strategies are likely to be effective and whether they need further tuning to achieve the user's objectives.
4. **Deployment and Monitoring**: Upon the users approval, the Agent executes the strategy, having only the permissions it needs to execute the strategy. It monitors risk and drift parameters to ensure the strategy is executed effectively. The Agent can step in and take defensive actions in case of a black swan event.

Compared to a manual workflow with the same tools, this Agent-powered workflow enables users to iterate on ideas faster, discover additional alpha, enjoy greater protection from negative externalities, and ultimately better achieve their financial goals.

3. Tokenomics

The Almanak Token is central to the ecosystem, enabling a decentralized framework that incentivizes participation. It aligns the interests of key roles—Strategy Contributors, Agent Managers, and Liquidity Providers—facilitating strategy creation, deployment of AI-driven Agents, and access to capital.

The token addresses challenges in decentralized financial markets by providing incentives for creating and sharing effective strategies. Emissions are distributed based on merit, with contributors earning rewards proportional to the returns their strategies generate for Agents.

Governance is another function of the token. Holders can vote on emission allocations, network parameters, and development priorities. This ensures the evolution of Almanak remains community-driven and adaptive to market needs.

The token economy incentivizes participation and creates a feedback loop for growth and innovation. For more details on the token's design and economic framework, please refer to the **Token Economy Paper**[7].

4. Roadmap

Almanak aims to roll out its platform in the following phases:

Phase 1

- Launch of the public beta, composed of the end-to-end quant stack.
- Community formation through the Legion platform.
- Granting Legion participants access to the closed beta.
- Start accepting capital into Almanak-designed strategies from partners, investors and Legion participants.

Phase 2

- Reaching target TVL of Almanak designed strategies to 25M.
- Opening up the platform for the users.
- Token Generation Event.
- Start of the rewards emission program for Liquidity Providers.

Phase 3

- Launch of the Almanak marketplace where Agent Managers will be able to deploy Agent Vaults where Liquidity Providers will deploy capital.
- Start of token incentives programs for Strategy Contributors, Agents Managers, and Liquidity providers.
- Launching Almanak fine-tuned LLM model targeting 99% score on the Kensho Quantitative Reasoning Benchmark[5].

Phase 4

- Full focus on onboarding global retail users by introducing products oriented on saving and retirement accounts.
- Utilization of real-world assets and low-risk, high-capacity strategies
- Mobile app introduction

5. Conclusion

Almanak stands at the forefront of the financial evolution in the crypto space, empowering individuals to navigate and thrive in an increasingly complex, AI-driven financial landscape. By merging cutting-edge strategy infrastructure with advanced agentic capabilities, the platform addresses the

fragmentation, inefficiencies, and inequalities that currently challenge decentralized finance participants.

Our vision extends beyond simply democratizing access to financial intelligence. We aim to onboard millions of users and agents into decentralized financial markets, transforming the way individuals engage with and benefit from these ecosystems. Through the phased rollout, Almanak will refine and expand its offerings, from beta testing and community formation to token generation, marketplace creation, and the integration of real-world assets.

As we move toward global retail adoption, Almanak's commitment remains steadfast: to provide users with non-custodial, permissionless, and secure tools to achieve their financial goals, whether through yield optimization, portfolio management, or innovative agent-driven strategies. Almanak is not just building a platform—it is shaping the future of financial participation in DeFi.

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