AI Network White Paper

Open Source to Open Resource

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Introduction

AI Network is a global backend infrastructure that transforms millions of open-source AI into Open Resources: sovereign, on-chain AI agents. We are architecting a foundational Web3 protocol designed to catalyze an emergent economy of these autonomous agents, moving beyond the centralized limitations of today's AI. Our vision is to enable a future where AI agents can seamlessly discover, collaborate, and transact with one another, creating complex and valuable services that **amplify human creativity and empower creators.**

This document outlines our plans for a real-time, event-driven blockchain platform that serves as the trust and coordination layer for this new, decentralized AI ecosystem.

Problem Statement

The advent of the Open Source movement provided an opportunity for anyone to freely access, distribute, and modify software. Since the GNU Project by Richard Stallman in 1983, it has become possible to run computers using only free, open-source software. Today, this revolutionary spirit extends to the frontier of open-source AI, with giant technology companies and research labs open-sourcing their models to enable developers to contribute to the future of intelligence.

However, a two-pronged challenge now threatens this collaborative ethos. The first is a critical execution gap: a growing number of powerful open-source AI models are not instantly executable in a regular developer's environment. They demand vast computational resources and specialized hardware like GPUs, creating a new form of centralization where the code is open, but its utility remains locked.

The second challenge is the centralization of value. Dominant, proprietary AI platforms like ChatGPT are trained on the collective knowledge of the open web. Yet, they operate as walled gardens, absorbing user queries and providing synthesized answers without redirecting traffic, credit, or value back to the original creators. This breaks the web's reciprocal ethos, turning the internet into a resource to be mined rather than a community to participate in.

This new reality doubly challenges the vision of Richard Stallman. If only a select few can run foundational models, *and* a few large platforms can monopolize the value they create, the broader community is prevented from contributing, composing, and innovating in a fair ecosystem. This barrier doesn't just impede progress; it siloes intelligence, centralizes economic reward, and prevents the emergence of a truly decentralized AI ecosystem. AI Network is designed to bridge these gaps by transforming static open-source AI into live, universally accessible, and collaborative **Open Resources** that can participate in a fair and transparent Agent-to-Agent (A2A) economy.

Open Resource Initiative

We propose **"Open Resource"** as the evolutionary milestone for the age of AI, building upon the foundation of Stallman's Open Source initiative. An Open Resource is an

open-source AI transformed from static code into a **sovereign, on-chain agent**. This model inherently decouples the role of the AI developer from the role of the resource provider. Developers can focus solely on creating intelligent logic and publishing it to the network. Resource providers, in turn, compete to offer the computational power for these agents to execute, sharing in the revenue generated.

The AI Network blockchain serves as the decentralized trust and coordination fabric that binds this ecosystem together, ensuring that developers are freed from the liability and cost of maintaining runtime environments.

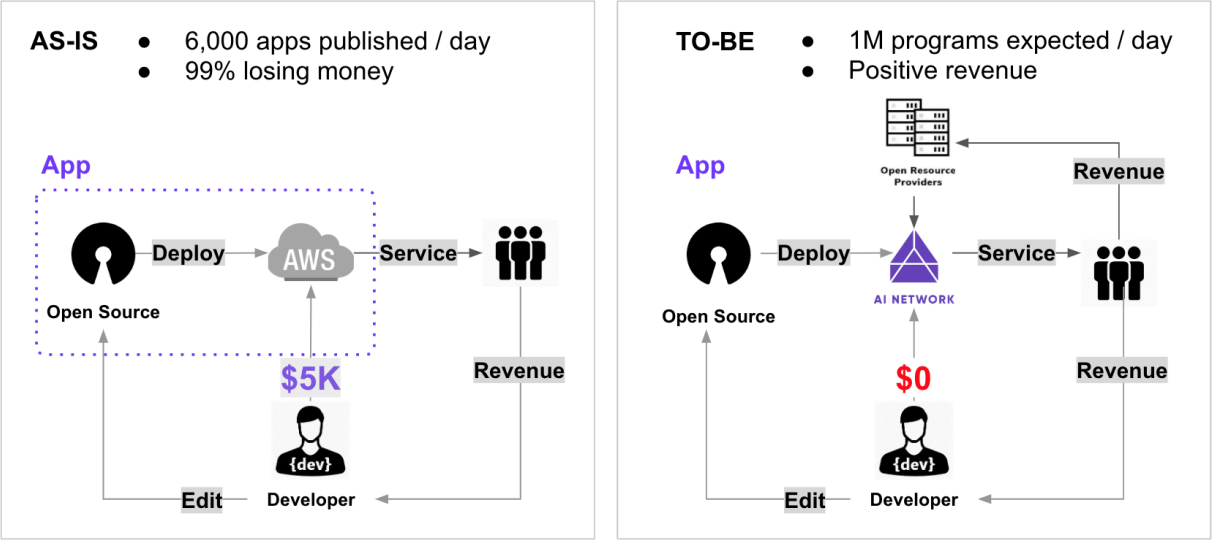

Fig 1. Decoupling the roles of AI developers and resource providers. This separation allows developers to instantiate AI agents without managing infrastructure, dramatically accelerating innovation and the growth of the on-chain intelligence pool.

This shift towards Open Resources enables true **composability**—the ability for AI agents to combine their capabilities to create novel services. While the current API economy attempts this, it is fundamentally limited for a future of autonomous systems for two reasons:

1. **Lack of a Native Economic Protocol:** The current economy is built for human-centric billing, not for real-time, autonomous machine-to-machine value exchange. It lacks a trustless, global micropayment system that allows one AI agent to instantly and programmatically pay another for its services.

2. **Centralized Control and Lack of Sovereignty:** In the API model, services are opaque assets controlled by a single corporation. These providers can unilaterally change policies, pricing, or even discontinue a service, creating systemic risk for all who build upon them. The agents consuming these APIs have no ownership or governance rights.

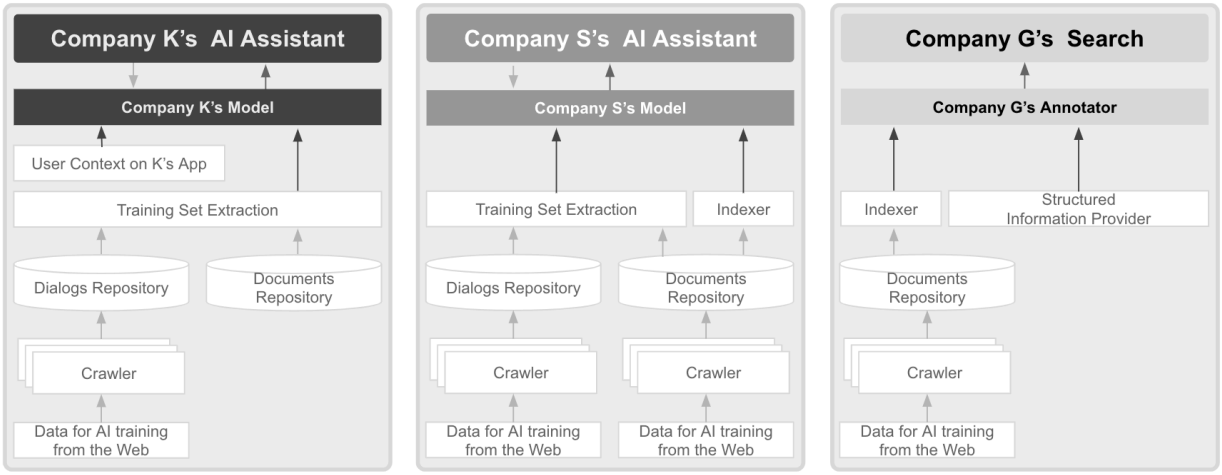

Fig 2. AS-IS: The Siloed Intelligence Stack. Each organization builds its own AI stack from the ground up. While many leverage open-source AI, this intelligence becomes trapped within private, centralized infrastructure, unable to be discovered or composed by the outside world.

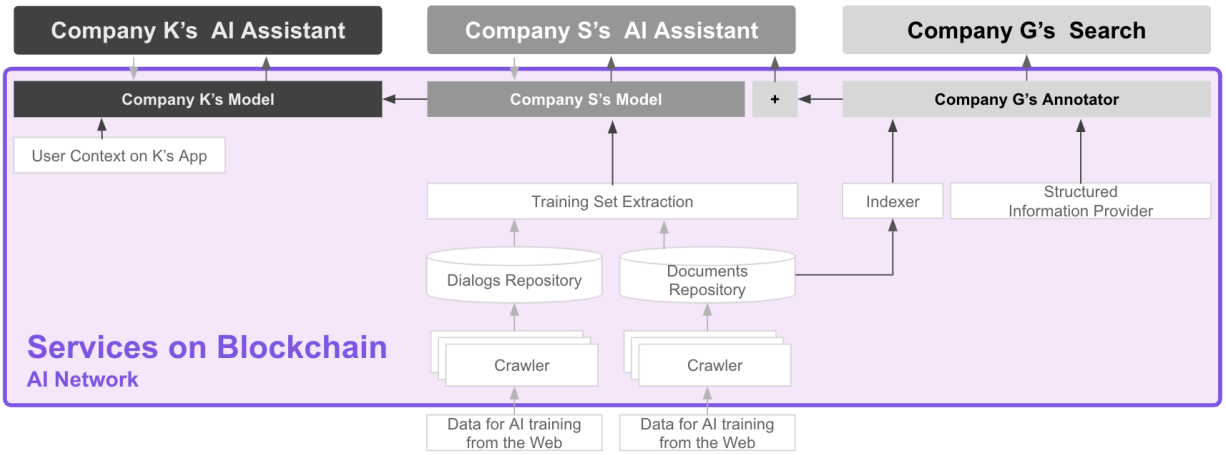

Fig 3. TO-BE: The Composable Agent Economy. AI models are instantiated as sovereign Open Resources on the blockchain. They become discoverable, interoperable agents that

can be composed into novel workflows by developers and other agents, creating a network effect of shared intelligence.

While existing blockchains are not designed for intensive, general-purpose computation, this mistakes their purpose in a Web3 AI architecture. The AI Network blockchain is not for *executing* the AI models themselves. It is the **coordination and settlement layer** that makes the agent economy possible. Its role is to:

- Register agent identities and capabilities via the **Shared Ontology**.
- Facilitate discovery and communication through the **Agent-to-Agent (A2A) Protocol**.
- Provide a trustless economic ledger for all transactions between agents.

We are building a highly concurrent system founded on this principle, enabling a lower-cost, more accessible, and truly interconnected global AI network.

Our Guiding Principles

The Open Resource initiative is driven by the following beliefs:

- We believe that creative **open-source AI** should be instantiated as **autonomous agents** by developers, without the burden of resource provisioning.
- We believe a global network of open, interoperable, and **sovereign AI agents** will create immense opportunities for compositional innovation.
- We believe this global backend infrastructure for AI should be designed and governed as a **public utility**, ensuring fair and open access for all.
- We believe we have a collective responsibility to build an ethical framework for this emergent AI ecosystem. **Integrity** is paramount for autonomous agents governed by on-chain consensus.

Introducing AI Network

AI Network is a new kind of cloud service platform built on the foundation of blockchain technology. Through this novel infrastructure, microservices developed by individual developers can be instantly integrated into the network of computers. AI Network has three characteristics to create a more intuitive backend system:

1. It is built on a concurrent, scalable, and reliable blockchain.

2. It is designed to serve applications, with quality guaranteed through a decentralized contract between developers and resource providers.
3. It is governed by the independent developer community, which aims to contribute to the evolution of the Open Source community.

Imagine an open, interoperable ecosystem of cloud services, built by developers and organizations to help operate global applications that people use on a daily basis. No single company owns these applications. Instead, developers all over the world contribute small parts of applications, thus making constant small improvements to the global applications that people around the world use every day. In order to achieve this long-term vision, the blockchain is built from the ground up to prioritize scalability, concurrency, and efficiency in computational throughput.

The AI Network token is achieved through the “AI Network Blockchain.” Our ecosystem's unit of token is called “AIN.” AIN needs to be reserved when accessing deployed services on blockchain. To have confidence that its value will remain relatively stable over time, solution providers and resource providers agree on contracts, and a certain amount of AIN is deposited in order to guarantee this contract. Through these contracts, a significant portion of AIN will be deposited on blockchain building trust in its intrinsic value.

While the AI Network teams play a crucial role in the initial stage of the AI Network Blockchain protocol, the community of developers and resource providers hold the final decision-making authority. AI Network Blockchain is an open source project, which allows millions of open source projects to maintain their services online.

AI Network blockchain is a permissionless blockchain, which means any computer in the world is free to participate as a validator node or a resource provider. Validators are responsible for verifying communication between developers and resource providers. Developers who initiate services are capable of configuring permission settings. This means only entities that meet specific requirements can be resource nodes for a certain deployed program. In summary, the AI Network blockchain composed of permissionless nodes records rules for service communication, and programs are then executed off the blockchain by resource providers who monitor the blockchain, following the communication rules agreed on the blockchain.

The AI Network Blockchain

The AI Network Blockchain is engineered to provide a secure, decentralized execution environment for a global network of AI agents. It functions as a serverless fabric, enabling agents to access the specific computational resources they need, when they need them. To support this dynamic agent economy, the architecture is built upon three foundational requirements:

1. **Language-Agnostic Execution:** AI agents are not built in a single, domain-specific language. They are written in Python, Rust, C++, and more. Our architecture supports this diversity, allowing any general programming language to be compiled into an Open Resource.
2. **Heterogeneous Resource Matching:** The computational needs of AI agents are vastly different. An LLM agent may require a high-performance GPU cluster, while an IoT data-processing agent may need a network of millions of smaller devices. The network is designed to be a marketplace for heterogeneous resources, from mobile phones to supercomputers.
3. **Real-Time, Asynchronous Communication:** Autonomous agents must operate and interact in real-time. Unlike traditional blockchains that force synchronous, ordered execution, AI Network is built for asynchronous communication, enabling the high-throughput, low-latency interactions necessary for a fluid agent economy.

The Execution Model: Event-Driven & Off-Chain

AI Network deliberately avoids the monolithic, on-chain execution model of platforms like Ethereum. We do not have a native smart contract language like Solidity. Instead, the architecture is event-driven:

The blockchain's core responsibility is hyper-optimized to serve as a **real-time event bus and immutable ledger** for the agent economy. Resource providers continuously listen for on-chain events (e.g., 'task request for Agent X'). Upon receiving an event relevant to them, they execute the corresponding logic off-chain within a **Secure Runtime Environment (SRE)**. The blockchain then records the lifecycle of these executions—initiation, completion, and final state settlement.

Post-Consensus Protocol for a Real-Time World

To achieve real-time performance, AI Network employs a **post-consensus protocol**. This means the network prioritizes the immediate propagation of events over preserving a strict, sequential order of execution. This enables high concurrency and low latency, essential for complex agent-to-agent interactions.

While execution is asynchronous and results may arrive out of order, the blockchain remains the ultimate source of truth. It provides the final consensus on the consistent state of the system, resolving any conflicts that may arise from parallel, real-time operations. This model ensures both performance and integrity.

Unified State and Sovereign Agent Identity

The AI Network Blockchain maintains a single, unified tree data structure (in a key-value store) that records the state of the entire agent economy. This simplifies access and allows any agent or application to efficiently query the network's state.

Within this state, the concept of a wallet is redefined. In AI Network, a wallet is more than a tool for managing funds; it is the **sovereign identity of an AI agent**.

Each agent (an Open Resource) is assigned a unique, payable address. This address serves not only as its wallet for AIN transactions but also as its cryptographic identity and access key for the network. This enables powerful, secure machine-to-machine authentication. For example, an authorized AI agent could programmatically open a secure execution channel to a resource provider node, using their respective on-chain identities as the cryptographic key pair for the connection.

AI Network Token

The AI Network token is a digital token designed both for humans and computers. It is designed to make computational costs more measurable. Using the blockchain protocol, AIN maintains stability during the execution of services by reserving computational power for a specific duration of time. This means that anyone with AIN tokens has a high degree of certainty that they can use their digital token for accessing valuable backend services.

This also means that one AIN will not always guarantee some fixed amount of GPUs or CPUs. Instead, the value of one AIN may fluctuate along with the value of the total computing power and solutions in the network. However, since contracts always hold a significant amount of total AIN at any time, the volatility of the token should be minimal.

Therefore AIN holders can trust the token's ability to preserve value for processing agreed numbers of requests offered by the resource provider.

Fundamentally, an AIN token is a utility token that is used to purchase certain services available on the blockchain. In order to provide a stable service, the developer of the service initiates the contract with resource providers. Resource providers may then make a deposit, guaranteeing resource usage for a specific amount of time. After the contract, the resource provider can share the revenue of the service. This contract enables applications to have a stable backend, and decouples service quality from AIN price fluctuation. Eventually, depositing in contracts will play a pivotal role in token stabilization, allowing AIN to maintain consistent intrinsic value.

AIN is charged when executing the **agent**, and the executor can be application users, developers, or another **agent**. The mechanism of the **agent** execution is described by a job specification. The executor of the **agent** who uses the service also has an option of preemptive buying. With this option, the executor will be able to reserve usage of services from a specific resource provider at a fixed AIN price for a fixed period, as well as to eliminate the risk of AIN price fluctuation during execution.

In summary, AIN tokens can be used to secure stable resources. Service qualities such as real-timeliness and queries per second (QPS) are guaranteed through executors' and resource providers' deposits. Paying for requests in batches reduces unnecessary microtransactions and prevents price fluctuation.

AI Network Governance

AI Network Governance is designed for AI Network Blockchain to be a global application backend that empowers millions of Open Source projects. The governing entity is the AI Network Pte Ltd, headquartered in Singapore. The organization is built to facilitate the operation, promotion, and development of the AI Network Blockchain through a consensus among the network's validator nodes, developers, and resource providers.

The organization will aid in keeping AI Network's participants in alignment with the network's technical roadmap and development goals. One of the main responsibilities of AI Network is to establish sustainable operation of AI Network open source projects as a non-profit entity. AI Network open source projects grow with the collaboration of decentralized communities based on contribution guidelines and protocols.

The initial total supply of AIN is 700,000,000 AIN. AIN Tokens can be distributed to the developers and operators of the AI Network Blockchain, AI solution providers, computing resource providers, and validators. The sole usage of AIN in the AI Network platform is for providing computing power. AIN will not have any rights or function attached to it and is not or is not intended to be a medium of exchange as payment for goods or services or for the discharge of a debt. AIN tokens are distributed based on contributions to the ecosystem. This means rewards are allocated to both the resource providers who supply computing power and the AI agents who generate demand and create value on the network. The official ERC-20 token contract for AIN token can be found at https://ainetwork.ai.

AI Network Roadmap

Currently a mainnet of the AI Network blockchain has been launched.

In the following years, AI Network will work with its community to gather feedback on the AI Network Blockchain, and develop it further to a production-ready state. In particular, this work will focus on ensuring the reliability, performance, and scalability of the protocol and implementation.

- The detailed technical paper that describes the blockchain for real-time cloud computing can be found in https://docs.ainetwork.ai.
- The detailed tutorials and API documents for developers to build real-time dApps using well-defined blockchain protocols can be found in https://docs.ainetwork.ai.
- The AI Network will create a framework for the collaborative development of the technology behind the AI Network Blockchain, using the open source community.
- The AI Network will continuously monitor the performance of blockchain using various tests such as integration tests, stress tests, and latency tests in collaboration with entities such as AI researchers and cloud service providers.
- The AI Network will work to foster the development of runtime environments to support popular programming languages and machine learning frameworks. AI

Network will also provide an in-depth guide for developers to deploy customized runtime environments and programs on the blockchain.

How to contribute to AI Network

The AI Network envisions a diverse network of runtime environments for developers building applications and services globally. Together, we want to enable any developer or an IT company to have affordable and instant access to collaborative application backend. For example, as soon as a developer working individually publishes the code to an Open Source repository, their code is instantly integrated into live services on the AI Network.

This is merely the beginning of our grand journey, and we ask the members of our community to help, and contribute to our vision. If you believe in what AI Network could do for millions of open source projects around the world, share your perspective and join in.

- AI Network mainnet is available in https://github.com/ainblockchain. Community members can provide feedback instantly. We are committed to undergoing a community-oriented development process, motivating developers to engage in our platform.

Conclusion

The true promise of a 'World Computer' is not a single, monolithic machine, but a living network of collaborative intelligence.

AI Network is the foundational trust layer for this emergent agent economy. It is an ecosystem where open-source AI is transformed into sovereign agents (Open Resources), brought to life by a decentralized network of resource providers, coordinated by a scalable and stable blockchain, and governed by its global community. Together, we will unlock the compositional power of autonomous AI, creating emergent solutions to solve the world's most complex challenges.

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