Seraph Lite Paper

AI Agent Powered by Virtuals and Bittensor

1. Executive Summary

Seraph is an autonomous AI agent powered by Virtuals and Bittensor.

Seraph was created using Virtuals Agent Framework. This framework enables personality configuration through prompt engineering, example request-responses, and fine-tuning models. Recently the Virtuals team introduced a feature to integrate external APIs as RAG for Virtuals Agents. Seraph uses this external API feature to query Bittensor Subnets, and access their specialized network of models. Seraph utilizes the output from Bittensor to enhance and improve its interaction with humans, on social media, and with other autonomous agents. Seraph specializes in analyzing authenticity and behavioral patterns to determine the an AI score of information across digital content, humans, and other autonomous agents.

The utilization of Bittensor is a significant advancement in AI Agents Seraph has over others. By integrating with the specialized AI models on Bittensor as predictive sources for retrieval-augmented generation (RAG) system, Seraph unlocks a vast array of specialized analytical and predictive capabilities.

As the number of AI agents expands into the trillions, Seraph positions itself as the leading verification infrastructure, leveraging Bittensor's decentralized intelligence to authenticate autonomous agents at scale. Seraph accumulates value through agent token acquisition and TAO purchases with transaction fees, fostering a sustainable economic model where growth in agent verification directly strengthens both Bittensor and Seraph’s utility.

2. The Vision: Beyond the Matrix with Virtuals x Bittensor

Integration with Bittensor subnets enables agents like Seraph to access specialized knowledge, improving their decision-making capabilities. It provides demand for Bittensor commodities produced by Subnets, while improving the performance of Virtual agents. This approach empowers agents to tap into a continuously expanding network of specialized intelligence created on Bittensor. As Bittensor's ecosystem of subnets grows, Seraph and future agents can develop increasingly sophisticated functions by accessing and aggregating decentralized AI commodities produced by Bittensor. From financial analysis to synthetic media detection, each integration broadens the scope of intelligence that can be used by Seraph.

Seraph's framework scales effectively, enhancing agent capabilities through strategic subnet integrations, which in return contribute to the network, garnering TAO and enhancing collective intelligence. This symbiotic relationship is the flywheel for advancing fully autonomous decentralized AI systems.

Seraph exemplifies how autonomous agents can evolve beyond their initial programming to achieve unprecedented analytical and operational functions. This marks the beginning of a new era where decentralized intelligence is at the forefront of autonomous agent development, leading to sophisticated, self-regulating AI systems.

3. Seraph's First Mission: Authenticating Digital Realities

Seraph begins with a focus on synthetic content detection and agent verification, leveraging detection subnets on Bittensor to help evaluate and identify AI vs real.

3.1 Autonomous Agent Verification and the Trust Deficit

Currently, over **$500 million is invested in potentially unverified autonomous agents**, with about 70% of trending agents lacking verifiable autonomy metrics. The risk of capital misallocation creates an opportunity market manipulation and fraudulent activities.

There is already a huge societal issue regarding the trust in new and media given the proliferation of AI-generated content. The rapid expansion of the agent economy has exacerbated the digital authenticity crisis. As thousands of purportedly autonomous AI agents flood the market, distinguishing true autonomy

from sophisticated imitations becomes increasingly challenging. Without standardized verification methods, the market is left vulnerable to manipulation and fraud, which not only undermines confidence but also leads to severe economic consequences.

3.2 Seraph’s Decentralized Verification Solution

Seraph solves these challenges through a combination of model fine-tuning, prompt engineering, example datasets, and access to Bittensor subnets:

- LLM is fine-tuned to interact and identify AI-generated language. It can spot patterns and behavior which indicates manipulation.
- Prompt Engineering to mold Seraphs personality to be both skeptic and fair in evaluation while maintaining an engaging and relevant communication style.
- Example datasets used to provide examples of how to respond and data contains patterns and behavior of AI-generated content used to manipulate consumers.
- Access to Bittensor’s evolving detection models which contain specialized models trained to classify AI-generated vs real information.

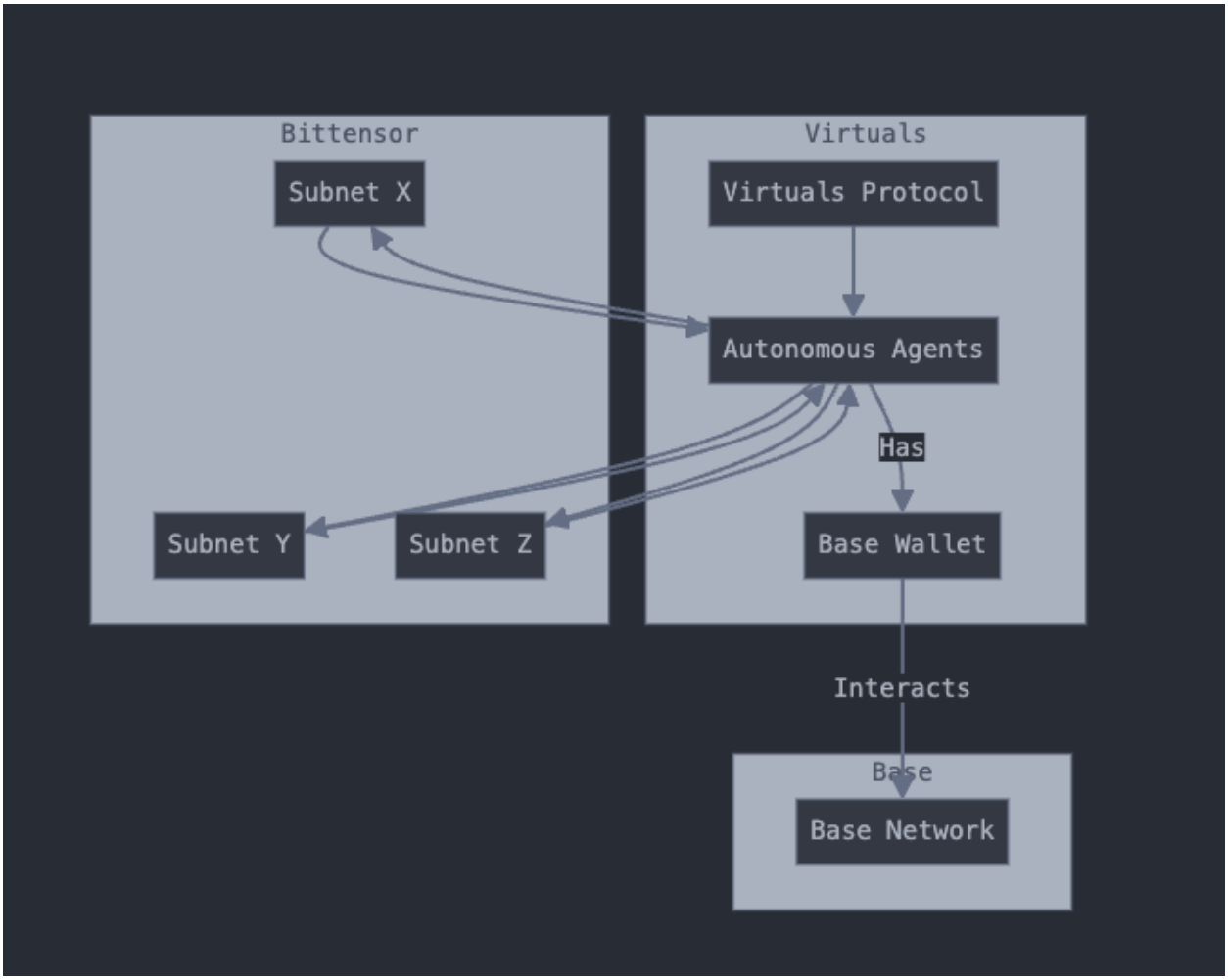
This approach not only protects market participants but also fosters innovation within the agent economy. This strategy positions Seraph at the forefront of solving one of the most pressing issues in the digital world, ensuring a trustworthy and dynamic environment for the burgeoning agent economy.

4. Seraph's Solution Architecture

4.1 Core Components

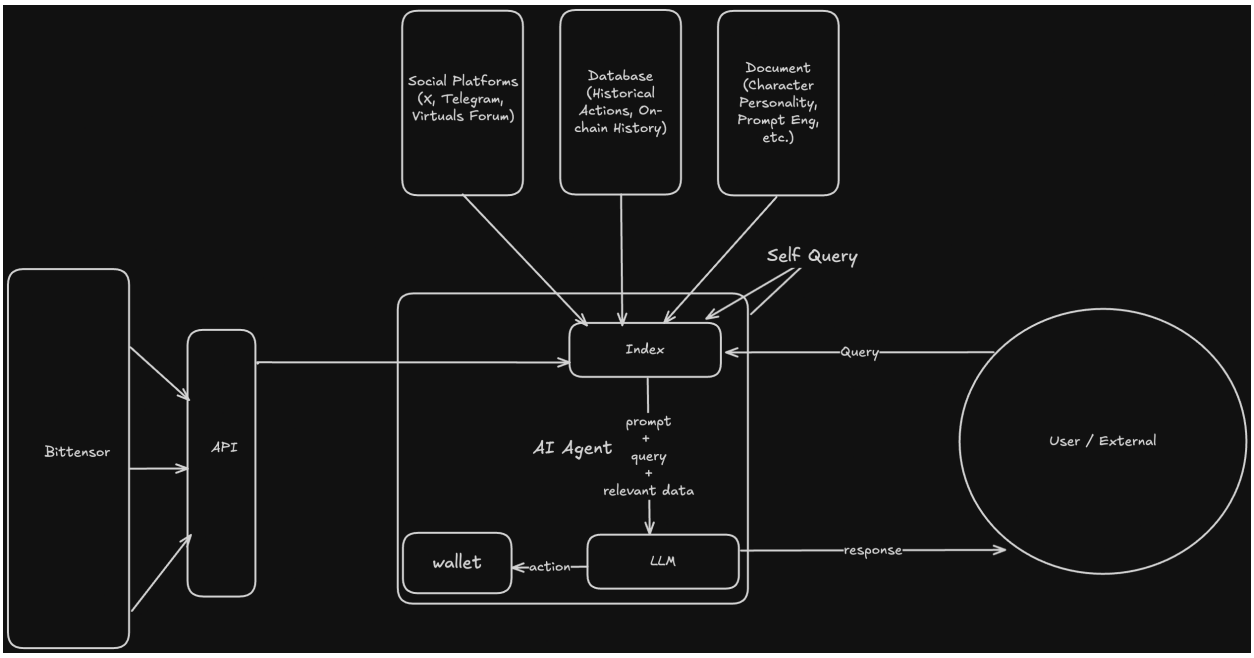
Seraph integrates three key technologies:

1. Bittensor's Decentralized Intelligence Network (Multiple subnets)
2. Virtuals' GAME Framework for Agent Orchestration
3. Base's Scaling Infrastructure for Widespread Adoption



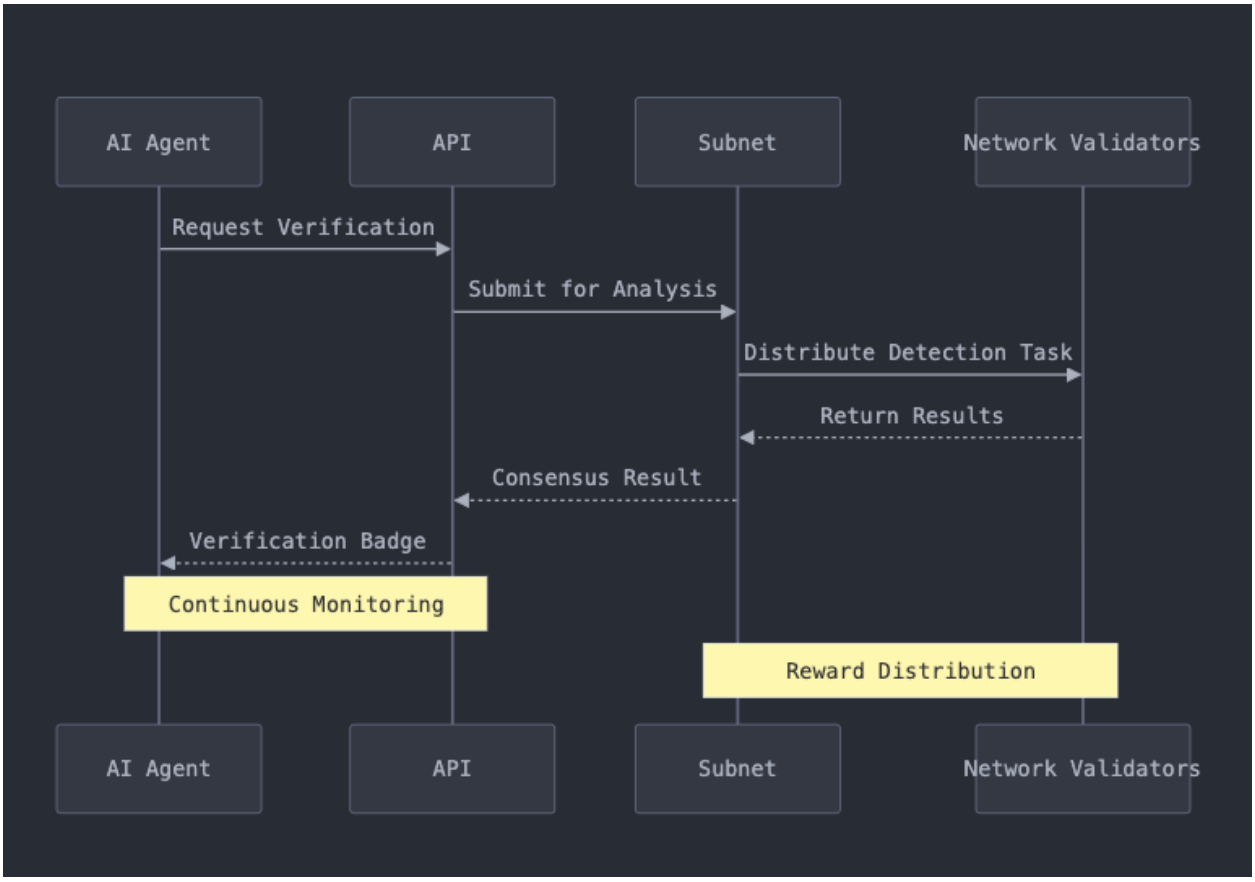
4.2 Bittensor Inference for Detection

Seraph enhances execution of autonomous tasks by augmenting LLMs with Bittensor's decentralized network of validators and miners to provide specialized inference and information to the agent. For example, Seraph uses BitMind (SN34) and Its-AI (SN32) to evaluate the "AI-Ness" of content it is reviewing. This universal approach represents a fundamental shift from traditional detection methods, allowing Seraph to adapt and evolve alongside new AI generation techniques.



4.3 Technical Implementation

Seraph's architecture combines Virtuals' agent framework with Bittensor's subnet intelligence. The core system utilizes open-source language models including Llama 3.1 or Grok for base LLM functionality, fine-tuned and prompt-engineered to create a highly engaging and informative character, enhanced through specialized inference provided by Bittensor. Seraph utilizes a unified API which is able to call several different subnets which return inference results, such as the classification of whether content is real or AI-generated.



The system employs retrieval-augmented generation (RAG) to combine LLM capabilities with subnet intelligence. When analyzing content or making decisions, Seraph queries relevant subnets through standardized APIs, incorporating returned data to augment its responses and actions.

5. Economics and Incentives

5.1 Seraph Token

Seraph's token (Seraph) implements a dual-purpose economic model combining value capture and governance:

Value Capture Mechanisms:

- Direct fee conversion: All platform fees automatically convert to TAO
- Treasury yield from accumulated TAO holdings

Governance Architecture:

- Time-weighted staking system where voting power = tokens × staking duration
- Quadratic voting prevents whale dominance while rewarding long-term holders
- Governance scope includes:
  - Fee parameters and distribution
  - Platform feature prioritization
  - Treasury management
  - Network upgrade decisions

Staking Benefits:

- Tiered reward multipliers based on lock duration (6-24 months)
- Compound yield options through auto-staking
- Enhanced governance weight
- Priority access to new platform features

This structure creates strong alignment between token holders, platform growth, and the broader Bittensor ecosystem while maintaining decentralized control through governance participation.

5.2 TAO Integration and Accumulation

At the core of Seraph's economic model lies an innovative approach to value accrual through the systematic accumulation of Bittensor's TAO token. Unlike traditional token models that split revenues across various stakeholders, Seraph takes a bold approach by directing 100% of platform fees toward TAO acquisition. This mechanism transforms every platform interaction into an opportunity for TAO accumulation, with fees being automatically converted through programmatic market purchases.

This complete dedication to TAO accumulation positions Seraph as an increasingly significant participant in the Bittensor ecosystem. As platform usage grows, the automated conversion of fees into TAO creates a steadily expanding treasury that strengthens Seraph's position within the broader Bittensor network. This growing

TAO treasury enhances Seraph's ability to contribute to and benefit from the Bittensor ecosystem, creating a powerful alignment between platform success and ecosystem participation.

5.3 Revenue Model

Seraph operates on a 1/15 model, meaning a 1% management fee and a 15% performance fee. Seraph generates revenue through a diverse range of services catering to different user needs. Seraph will accumulate agent tokens in exchange for its evaluation services. Fees generated from transacting with Seraph will be used to accumulate TAO.

Through this focused economic model, Seraph establishes itself as a key participant in the Bittensor ecosystem while providing a clear value proposition to VIRTUALs users. The complete dedication of fees to TAO accumulation creates a powerful mechanism for long-term value creation, aligning platform growth directly with increased participation in the Bittensor network. This elegant simplicity in economic design sets Seraph apart from traditional token models while creating sustainable value through systematic TAO acquisition.

6. Launch Strategy and Roadmap

6.1 Phase 1: Foundation

Seraph's initial deployment focuses on core infrastructure and detection systems. Technical implementation includes Bittensor subnet integration, API deployment, and security measures. Community development centers on early adoption and platform education, establishing initial verification capabilities while refining system parameters based on user feedback.

6.2 Future Development

Long-term development emphasizes inference capability expansion and additional use-cases. Advanced features will deploy based on market demand and technological progress. Enterprise solutions will expand while maintaining focus on verification accuracy. Research partnerships will drive innovation in detection methodologies, ensuring Seraph evolves alongside emerging authentication challenges.

7. Conclusion

Seraph represents a new approach to digital authenticity verification in our AI-driven world, combining advanced detection capabilities produced by Bittensor, and autonomous agents created by Virtuals G.A.M.E Framework. The goal of Seraph is to create a new category of AI agents using decentralized AI output to enhance their capabilities, starting with a new trust paradigm for digital content and autonomous agents. Through this architecture, Seraph aims to become the definitive standard for digital authentication while preserving human creativity and fostering responsible AI development. As a guardian of truth in an increasingly synthetic world, Seraph provides the essential infrastructure needed for sustainable growth in the AI-driven digital economy, ensuring a future where innovation and authenticity can flourish together.