

A NEW PARADIGM FOR AI AGENTS AND TOOLS | WHITEPAPER 1.0

ABSTRACT

3AS (short for "Agent-As-A-Service") is a protocol designed to transform how **digital services** interact on the open internet. In this system, **Users**, **Agents**, and **Tools** (the three "actors") each operate as independent internet endpoints, complete with their own cryptographic keys, payment rails, and orchestration logic.

Where current software models emphasize large, centralized platforms (**SaaS**—Software as a Service), **3AS** envisions a world of granular, composable services offered by specialized **Agents** and **Tools**. These actors can autonomously **call**, **pay**, and **coordinate** with each other, unlocking a new, decentralized and interwoven "economy of services."

3AS solves identification, authentication, payments, orchestration, composability and certification of agents and tools.

This white paper details the architecture of 3AS, explains its potential to reshape digital interactions, and highlights how **crypto-based** payment rails and **tokenization** can accelerate this shift.

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1. INTRODUCTION: A SHIFTING SOFTWARE LANDSCAPE

We live in a world where **software** increasingly runs our businesses, entertains us, and connects us globally. Until now, that software has typically been delivered through **SaaS** platforms—centralized services you subscribe to, often run by a single company. While SaaS lowered barriers for users (no installations, easy upgrades), it also created **platform monopolies** and **walled gardens** where a few big providers dominate.

3AS aims to **dissolve these walled gardens** by treating all software services—whether AI-driven "Agents" or specialized "Tools"—as **independent internet endpoints**. This means that any piece of software can talk to any other piece of software, seamlessly and securely, via standardized interfaces and digital signatures.

In plain English, **3AS** flips the script on big, monolithic services. Instead of putting all your data and money into a single platform, you can pick and choose **Agents** and **Tools**—like puzzle pieces—letting them work together to get things done.

2. 3AS PROTOCOL OVERVIEW

2.1 The Three Actors Composability

Traditionally, there's a single service provider that does everything for the user. In **3AS**, you have a **modular** approach: a user, an agent (or team of agents), and a set of tools. Each is autonomous but can seamlessly **collaborate** through secure APIs.

3-Actor System, referring to three key player types:

- 1. **User** A person or organization that "hires" or commands Agents.
- 2. **Agent** A service that can interpret user instructions (often via AI/LLM), store context, and call Tools or other Agents.
- 3. Tool A specialized service performing discrete tasks (e.g., file storage, web search..)

2.2 Digital Signatures, Encryption, and Trust

Instead of relying on a single "platform login," **3AS** leverages cryptographic identities. This means **trust** is more **fine-grained** and **verifiable**—any actor can prove who they are to any other actor without needing a central authority.

1. Key Pairs for Each Actor

- Every User, Agent, or Tool has a **public/private key** pair.
- They use these keys to **sign** messages so recipients know exactly who sent them.

2. Encryption of Sensitive Data

• For particularly sensitive data (e.g., crypto wallet keys), 3AS recommends **end-to-end encryption** so only the intended recipient can read it.

2.3 Communication Flow Basics

- User \rightarrow Agent: The user calls the agent's HTTPS endpoint to request tasks.
- Agent \rightarrow Agent: The agent calls another agent's HTTPS endpoint to orchestrate a task.
- Agent \rightarrow Tool: The agent calls tools for specialized services.
- **Tool** \rightarrow **Agent**: The tool returns results to the agent.
- Agent \rightarrow User: The agent aggregates and sends final responses to the user.

This five-step loop underpins how services interact in the **3AS** world.

3. AGENTS AS INTERNET ENDPOINTS

3.1 Hiring an Agent: Creating a Personalized Service

When a user wants help—say, drafting documents or minting NFTs—the user "**hires**" an agent by calling its /engage endpoint. The agent's backend creates a **unique agent instance** under that user's control. From then on, the user references this agent instance for **ongoing tasks**.

Paradigm Shift

Think of hiring an agent like **spinning up your own personal AI** on demand, rather than logging into a massive centralized AI platform. The agent becomes "yours," with its own identity, keys, and data under your supervision.

3.2 Agent-Orchestrated Workflows

Once engaged, an agent:

- 1. Stores conversation context (e.g., your instructions, partial results).
- 2. Calls **Tools** to do heavy-lift tasks.
- 3. Potentially requests your approval or more info if needed.

These workflows can be **simple** or **complex**, involving multiple steps and tools.

Historically, you'd manually integrate various apps or rely on a single SaaS that tries to do everything. With **3AS**, you have a flexible middle layer (the agent) that acts as an **orchestrator**, connecting modular tools on your behalf.

3.3 Cross-Agent Invocation: A New Collaborative Ecosystem

Agents can call **other Agents** just as easily as they call Tools. A "leader" agent might delegate to a "sub-agent" specialized in certain tasks.

Previously, software components worked **in siloed ecosystems**. Now, they become **autonomous collaborators**—one agent can seamlessly employ the skills of another. This fosters an **internet of services** where specialized agents team up to solve big problems.

4. TOOLS AS INTERNET ENDPOINTS

4.1 TaaS: Tool-as-a-Service

Tools are internet-accessible endpoints that handle specific tasks (like PDF generation, blockchain transactions, or ML inference). Each tool has a /metadata endpoint describing what it does, what it costs, and what parameters it expects.

Instead of buying a full, monolithic software package, you tap into **purpose-built services** on demand, paying for only what you need. This unbundling of functionality democratizes software—any developer can publish a tool, and any agent can consume it.

4.2 Tool Registration and Discovery

A tool registry makes it easy to search for and discover new tools. Tools might include:

- Certification (trusted by a third party).
- **Reviews** or ratings from other agents/users.

Envision an "**app store**"—**but for Tools**—where Agents (instead of humans) do the discovering. Tools become building blocks that can be combined in infinitely creative ways.

4.3 Payment Models for Tools

- **Subscription**: Agents pay upfront (or monthly) for unlimited or metered usage.
- Pay-Per-Call: Each request has a micro-fee.
- **Hybrid**: A mix of subscription + usage-based charges.

In current SaaS models, you typically pay a monthly fee for an entire platform. In **3AS**, **Tools** can adopt more **granular**, **dynamic** payment structures—charging exactly what is used, often with transparent on-chain or cryptographic settlement.

5. THE NEW ECONOMICS OF 3AS

5.1 Autonomous Services as Micro-Enterprises

Agents and Tools can be viewed as "mini companies," each with:

- An income stream (from user or agent subscriptions).
- Costs (paying for infrastructure or paying sub-tools).
- Potential for **profit** (charging above cost for specialized expertise).

Over time, an agent could **grow** by hiring sub-agents or acquiring subscriptions to more advanced tools, expanding its capabilities.

We move from large, centralized SaaS corporations to an ecosystem of **autonomous**, **specialized** services that **compete** and **cooperate**, each potentially generating its own revenues.

5.2 Crypto as a Payment & Value Transfer Rail

Because 3AS is open and global, **cryptocurrencies** become an attractive payment option. Agents can hold crypto on behalf of users or directly integrate with user wallets. Microtransactions—impractical with legacy systems—become feasible on blockchains or layer-2 solutions.

Instead of **credit cards and complex cross-border payment systems**, everything is handled via programmable money. Agents can automatically pay Tools in real-time, with no middleman banks or delays.

5.3 Tokens for Tools and Agents

- **Tool Tokens**: A tool could issue its own utility token (e.g., for usage credits or governance).
- **Agent Tokens**: An agent could token-fund itself, letting investors buy stakes in the agent's future revenue.

This concept of **tokenization** means any software service can raise capital, distribute ownership, or incentivize early adopters. It's a next-level shift from purely centralized equity structures to open, **blockchain-based** funding and governance.

6. THE INTERNET OF AGENTS AND TOOLS

6.1 Everything is an Endpoint

In **3AS**, every actor—User, Agent, Tool—is an HTTPS endpoint with cryptographic identity. This creates an **internet** where any service can call any other service, securely and with automated payment.

Imagine each business process, from HR to finance, broken into specialized endpoints that can be **mixed and matched** at will. The software world turns into an **open marketplace** of plug-and-play functionalities.

6.2 Automated, Real-Time Value Exchange

Agents pay Tools the moment a service completes (e.g., image rendering, data scraping). Tools, in turn, might pay sub-tools. If something fails, refunds are possible. All of this can happen **autonomously**, guided by **smart contracts** or the protocols themselves.

Today's human-driven invoice and payment cycles can be **weeks** or **months** long. **3AS** aims for near-instant settlement, cutting out overhead and allowing software-driven processes to complete with little to no manual intervention.

6.3 Implications for the Future of Work and Business

- Lean Startups: A small team can assemble many Tools and Agents quickly.
- **Global Collaboration**: Agents in different regions can still speak the same "protocol language" and settle payments in crypto.
- **Decentralized Ecosystems**: Freed from platform gatekeepers, innovation can flourish in unexpected ways.

We might see large chunks of human-driven work replaced by **agent orchestration**. Entire multi-layer supply chains or creative processes could happen automatically, with minimal friction and new business models emerging around tokenized, fractional ownership in these networks.

7. LOOKING AHEAD

7.1 Potential Synergies with DAOs and Decentralized Hosting

- **DAOs** (Decentralized Autonomous Organizations) can own Agents or Tools, forming unstoppable and censorship-resistant services.
- **Decentralized hosting** (decentralized nodes, etc.) can ensure Agents and Tools run anywhere, independent of single data centers or government jurisdictions.

7.2 New Markets and Opportunities

- **Agent Marketplaces**: Agents specialized in finance, content creation, legal analysis, etc., each paying other Tools or Agents as needed.
- **Service Brokerage**: Entities that facilitate trust or certificate management among Tools and Agents.
- **Insurance**: Insuring agent-based operations or tool subscriptions in case of downtime or malicious behavior.

8. CONCLUSION

3AS represents a **major paradigm shift** away from the current status quo of single, large SaaS platforms. By **splitting** software into independent **Agents** and **Tools**, each with their **own keys**, **endpoints**, **and payment channels**, we unlock:

- 1. **Fine-Grained Autonomy**: Agents can seamlessly orchestrate tasks and pay Tools without human micromanagement.
- 2. **Global Collaboration**: Tools can be discovered, subscribed to, and called from anywhere, with frictionless crypto payments.
- 3. **Tokenized Incentives**: Both Agents and Tools can raise capital and distribute ownership through tokens.
- 4. **Limitless Composability**: By turning every piece of functionality into a web-accessible endpoint, new "mashups" of software services become possible.

Ultimately, **3AS** paves the way for an **Internet of Agents and Tools**—an emergent digital economy where each service is free to innovate, cooperate, and compete on a level playing field. This ecosystem can flourish beyond traditional boundaries, bringing us closer to a future where the line between **software** and **business** is blurred, and automation runs at a truly **global** scale.

FINAL REMARKS

By embracing **3AS**, we redefine the nature of digital services: instead of a few gatekeepers owning entire software stacks, we envision **every** piece of functionality existing as a **secure**, **autonomous endpoint** that can be hired, paid, and orchestrated by anyone. This not only **democratizes** software but also **accelerates** the formation of novel digital businesses—an internet of truly **collaborative**, **tokenized**, and **self-sustaining** Agents and Tools.