

## **Patent Filing Highlights – AI Agent Banking Platform 051326 Specification.docx**

### **USPTO Non-Provisional Patent Application**

**Title:** Web4 Banking System Archetype: Artificial Intelligence Agent-Driven Tokenized Banking Protocol for Any Digital Asset

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**Effective Priority Date:** May 16, 2025 (claiming priority to provisional No. 63/709,462 filed October 20, 2024, and incorporating provisional No. 63/806,708 filed May 16, 2025)

This non-provisional specification discloses a comprehensive, generalized **Web4 Banking System Archetype** — a hybrid tokenized banking protocol that operates seamlessly across any traditional (Web2) financial system, any blockchain-based (Web3) decentralized finance environment, and any hybrid (Web4) object-oriented architecture. The invention integrates tokenization of Real World Assets (RWAs), trading/swapping of tokenized assets on crypto/commodity/security-based exchanges, AI-driven compliance and commerce, and a foundational non-linear informatics graph that treats all data and software as synonymous, self-referential programmable objects.

### **1. Coverage of Tokenization (Issuance of Commodity, Security, or Physical Asset-Backed Tokens/Crypto as RWAs)**

The specification provides end-to-end coverage for the automated issuance of tokenized RWAs. Any verifiable physical asset, commodity, security, contract, intellectual property, or digital asset (including AI resources such as compute capacity, data centers, storage, networking infrastructure, and AI usage tokens/credits) is pledged into customer-owned bankruptcy-remote special or sub-custody accounts without title transfer. These assets are verified via the real-world asset communication protocol, tokenized through the structured RWA primary/spot market framework, and backed by one-to-one par reserve in the multi-input RWA yield-generation circular model. Issuance is compliant with Regulation Crypto exemptions and tokenized securities treatment under regulatory compliance. AI-specific RWAs are explicitly supported as a new input to the circular model.

### **2. Coverage of Trading/Swapping Tokens on Crypto, Commodity, or Security-Based Exchanges**

The system enables full trading and swapping of tokenized RWAs on any exchange environment. The structured RWA primary/spot market framework, combined with the agentic commerce layer (x402 and x4xx interfaces) and real-time settlement compression, supports market orders, limit orders, options, forwards, futures, swaps, and atomic execution. All transactions are recorded immutably on any distributed ledger technology with Merkle-proof auditing. The informatics graph and superkernel provide exact-match

referencing, forensic accounting, and self-healing, eliminating oracles and intermediaries while enabling high-frequency, derivative, and institutional trading.

### **3. Novel Concepts Patentable as of May 16, 2025**

As of the May 16, 2025 priority date, the following concepts represent significant, non-obvious advances over existing tokenized asset and Web3/Web4 systems:

- Non-linear informatics graph as a foundational operating system treating data and software as synonymous self-referential Web Objects with holonomial hashing and radical object-oriented programming for on-the-fly self-correction and refactoring.
- Lightweight superkernel serving as both datacenter infrastructure and meta-orchestration layer for any OS, any AI/agent system, and any tokenization protocol.
- SLM with VML-to-VML learning providing exact-match Web Object referencing, replacing third-party corpuses or unstructured databases.
- AI real-world asset issuance backed by pooled AI resources (compute, data centers) and AI usage tokens/credits as verifiable RWAs within the circular yield model.
- Native integration of x402 Payment Protocol and x4xx family interfaces as standardized agentic primitives for autonomous commerce within a tokenized banking system.
- Full regulatory alignment (decentralized governance safe harbors, Regulation Crypto exemption, Bank Secrecy Act/AML obligations, NIST post-quantum standards, bankruptcy protections, and stablecoin yield prohibitions) through sovereign-identifier IAAS microservices.
- Regenerative multi-input RWA yield-generation circular model with eight interlocking inputs, including ESG/carbon value capture and real-time settlement compression.

### **4. Claim Recommendations from the Attached Specification**

The specification contains a robust set of independent claims (1–200+) that are fully supported and generalized for broadest scope. Key representative claims (adapted and highlighted for clarity) include:

#### **Independent Claim 1 (Overarching System)**

A system for tokenized banking and financial services operable across any traditional financial system, any blockchain-based decentralized finance environment, and any hybrid object-oriented architecture, comprising a non-linear informatics graph functioning as a foundational operating system in which all data and software are synonymous self-

referential programmable objects within a lightweight superkernel, together with an artificial intelligence agent framework, real-world asset communication protocol, automated consumption tax mechanism, interest-free tokenized banking services, structured real-world asset primary/spot market, fractional-reserve smart-contract pledging without title transfer, accounting normalization, creative equity monetization, quantum-resistant encryption, object/root-level superkernel security, institutional tokenization and staking services, multi-input real-world asset yield-generation circular model, object-level encryption, agentic commerce layer, jurisdictional tax-optimized treasury, and real-time settlement, all maintaining one-to-one par reserve backing and full interoperability.

**Independent Claim 173 (x402 Integration)**

A computer-implemented method for agentic commerce in any tokenized banking system operable across any traditional financial system, any blockchain-based decentralized finance environment, and any hybrid object-oriented architecture, comprising receiving an HTTP request, responding with an x402 Payment Required status code, instantiating the request and payment proof as self-referential Web Objects within the non-linear informatics graph, verifying settlement through holonomial hashing, and recycling yield share into the multi-input real-world asset yield-generation circular model.

**Independent Claim 181 (Decentralized Governance under Regulatory Compliance)**

A computer-implemented method for tokenized banking and financial services operable across any traditional financial system, any blockchain-based decentralized finance environment, and any hybrid object-oriented architecture, comprising operating a non-linear informatics graph and object/root-level superkernel as a decentralized governance system under regulatory compliance.

**Independent Claim 194 (Method – AI RWA Issuance Backed by AI Resources and Usage Tokens/Credits)**

A computer-implemented method for tokenized banking and financial services operable across any traditional financial system, any blockchain-based decentralized finance environment, and any hybrid object-oriented architecture, comprising: verifying and pooling AI resources (compute capacity, data centers, storage, networking) and AI usage tokens or credits as real-world assets within a real-world asset fund structure; and issuing tokenized AI real-world assets collateralized by the pooled assets while maintaining one-to-one par reserve backing.

Additional strong independent claims cover the informatics graph as foundational infrastructure (Claims 167–172), Regulation Crypto and Bank Secrecy Act compliance via IAAS microservices (Claims 182–183), NIST post-quantum integration (Claim 184),

bankruptcy-remote custody (Claim 185), and holistic regulatory compliance through the informatics graph (Claims 189–190). These claims are fully enabled by the detailed description, drawings (Figures 1–25), and operational flows. They provide broad, commercially robust protection for the Web4 Banking System Archetype as of the May 16, 2025 priority date.

### **Conclusion**

This specification constitutes a complete, ready-for-filing non-provisional patent application that significantly expands and generalizes the 2017/2018 RWA tokenization and trading concepts into a full Web4 banking ecosystem. The novel informatics graph, superkernel, AI RWA issuance, and x402-enabled agentic commerce represent substantial inventive contributions well beyond the prior art as of May 16, 2025.