

### **Independent Claim 8 (System – Hybrid Secure Storage for RWA Digital Twins)**

A system for immutable storage and trading of tokenized digital twins of any physical asset or RWA, comprising: an IoT edge layer that transmits verified RWA data; a blockchain ledger that mints value tokens representing the digital twins; and a hybrid storage architecture that distributes encrypted tokenized records across multiple servers such that no single server can reconstruct a complete digital twin without the full cryptographic blockchain record.

### **Dependent Claims for Independent Claim 8**

The following is a complete set of dependent claims (Claims 2–22) that further specify and narrow the system of Independent Claim 8. Each dependent claim is fully supported by the disclosures in the attached document (Patent Filing Highlights US20220180374A1.pdf), including the detailed descriptions of the IoT edge layer for verified RWA data transmission, blockchain ledger minting of value tokens as digital twins, hybrid storage architecture (encrypted tokenized records distributed across multiple servers with the requirement that no single server can reconstruct a complete digital twin without the full cryptographic blockchain record), multi-cloud redundancy, cryptographic binding, immutable recording, trading integration, primary-market issuance, and the overall secure immutable storage and trading architecture for tokenized digital twins of any physical asset or RWA as of the December 26, 2017 priority date.

### **Full Claim Set in Formal USPTO-Style Format (Reordered to Start with Claim 1)**

1. A system for immutable storage and trading of tokenized digital twins of any physical asset or RWA, comprising: an IoT edge layer that transmits verified RWA data; a blockchain ledger that mints value tokens representing the digital twins; and a hybrid storage architecture that distributes encrypted tokenized records across multiple servers such that no single server can reconstruct a complete digital twin without the full cryptographic blockchain record.
2. The system of claim 1, wherein the IoT edge layer comprises sensor devices, edge routers, and edge gateways configured to communicate using one or more wireless protocols selected from the group consisting of Bluetooth, Zigbee, WiFi, Z-Wave, Sub-Gigahertz, Cellular, Satellite, LoRaWAN, Sigfox, and combinations thereof.
3. The system of claim 1, wherein the IoT edge layer transmits verified RWA data continuously or in real time from physical facilities, infrastructure, renewable resources, or efficiency systems.
4. The system of claim 1, wherein the verified RWA data transmitted by the IoT edge layer has been automatically validated and certified by an IoT cloud platform to produce a certified digital RWA certificate prior to minting on the blockchain ledger.
5. The system of claim 1, wherein the blockchain ledger mints value tokens by creating an immutable digital asset record that includes one or more of public-key addresses, cryptographic block linking, timestamps, transaction data, user identifiers, equipment identifiers, validation reports, and verification statements.
6. The system of claim 1, wherein the blockchain ledger registers all participants and equipment associated with the physical asset or RWA to prevent double-spending or fraud and to establish verifiable ownership and provenance of the digital twin.

7. The system of claim 1, wherein the hybrid storage architecture distributes encrypted tokenized records across multiple servers or cloud environments such that reconstruction of a complete digital twin requires access to the full cryptographic blockchain record.
8. The system of claim 1, wherein the hybrid storage architecture maintains multiple redundant copies of the blockchain ledger across cloud environments to provide fault tolerance and Byzantine fault tolerance for the tokenized digital twin records.
9. The system of claim 1, further comprising a native exchange platform built on the blockchain ledger that enables trading, swapping, or derivative execution of the tokenized digital twins while recording every transaction as a new cryptographically linked block.
10. The system of claim 1, wherein the native exchange platform supports market orders, limit orders, options, forwards, futures, swaps, or pre-market contracts.
11. The system of claim 1, wherein the native exchange platform further supports advanced order types selected from the group consisting of short selling, trailing stop orders, conditional orders, One-Triggers-the-Other (OTO) orders, One-Cancels-the-Other (OCO) orders, One-Triggers-a-One-Cancels-the-Other (OTOCO) orders, and combinations thereof.
12. The system of claim 1, wherein the native exchange platform applies time-in-force rules to orders, the time-in-force rules selected from the group consisting of day orders, good-'til-canceled orders (up to 180 days), fill-or-kill orders, immediate-or-cancel orders, on-the-open orders, on-the-close orders, and combinations thereof.
13. The system of claim 1, wherein the blockchain ledger employs cryptographic hashing of each new block to prior blocks to ensure immutability of all tokenized digital twin records and trading transactions.
14. The system of claim 1, wherein the system provides permanent verification and auditability of every tokenized digital twin through the hybrid storage architecture and the full cryptographic blockchain record.
15. The system of claim 1, further comprising automated monetization by transferring funds to the seller while simultaneously delivering the value token (digital twin) to the buyer upon execution of each trade, swap, or derivative.
16. The system of claim 1, wherein the value token represents an immutable digital twin of any commodity, security, physical asset, financial instrument, or other RWA that is verifiable and cannot be double-spent due to the hybrid storage architecture and the full cryptographic blockchain record.
17. The system of claim 1, wherein the system operates in a closed-loop automated process from IoT edge layer transmission through validation, token minting as a digital twin, hybrid storage, and real-time trading or swapping on the native exchange platform.
18. The system of claim 1, wherein the hybrid storage architecture eliminates intermediaries by performing end-to-end immutable storage and trading of tokenized digital twins without off-chain custodians or centralized clearinghouses.
19. The system of claim 1, wherein the system supports high-frequency, derivative, and institutional trading of tokenized digital twins of any physical asset or RWA while

maintaining permanent immutability through the hybrid storage architecture and cryptographically linked blocks.

20. The system of claim 1, wherein the blockchain ledger treats the minting of value tokens as a primary market activity based on verified RWA data from the IoT edge layer.
21. The system of claim 1, wherein the hybrid storage architecture distributes encrypted tokenized records such that no single server holds sufficient information to reconstruct a complete digital twin without the cryptographic keys and full blockchain record.
22. The system of claim 1, wherein the system enables scalable, industrial-scale immutable storage and trading of tokenized digital twins of any physical asset or RWA by combining the IoT edge layer with the blockchain ledger and the hybrid storage architecture.

These claims form a self-contained, commercially robust claim family that directly maps to the system for immutable storage and trading of tokenized digital twins of any physical asset or RWA under the hybrid secure storage model, including IoT edge layer transmission, blockchain minting, and the distributed encrypted hybrid storage architecture as described in the December 26, 2017 provisional disclosure (and the incorporated earlier provisionals). The full set (renumbered to begin with Claim 1) can be incorporated into a non-provisional, continuation, or continuation-in-part application (alone or in combination with the claim families of Independent Claims 1–7) to further strengthen the Parisii patent portfolio for tokenized Real World Assets and blockchain-based RWA/digital twin infrastructure.