

USPTO filing US-20200027096-A1.

This was filed on Nov. 5th, 2018 with a priority claim to Nov. 7th, 2017. I believe this application covers the tokenization of a commodity, security, or other physical asset, represented as a digital asset (RWA) on blockchain. This patent also covers trading these digital assets (RWAs) in a commodities or financial exchange, including immediate buy/sell transactions, options, forwards and/or futures, and swaps.

Grok: Can you review this patent application with priority date of November 7, 2017, and explain how it covers the concepts of tokenization (issuance of commodity or security backed tokens or crypto) as well as the trading/swapping of these tokens on an exchange (crypto, commodity, or security-based exchanges). Elaborate on any novel concepts that would have been patentable at the time of the filing, November 7, 2017. Include any claim recommendations in the attached document relative to the discussion. Don't reference any carbon aspects specifically, but discuss in the broader sense of tokenized assets, or Real World Assets.

This provisional patent application (priority date November 7, 2017) provides broad and detailed coverage for the concepts of tokenization—the automated issuance of digital tokens or cryptocurrency units representing verified Real World Assets (RWAs)—and the subsequent trading or swapping of those tokens on crypto, commodity, or security-based exchanges. The disclosure integrates IoT-driven measurement and validation systems with blockchain-based ledger technology to create, record, and monetize tokenized assets in a fully automated, immutable end-to-end platform. It explicitly frames the invention as applicable to any asset-backed value token (generalized here as RWAs such as energy efficiencies, resource measurements, or other verifiable real-world data streams) and positions the blockchain as both the issuance mechanism and the trading venue.

1. Coverage of Tokenization: Issuance of Commodity- or Security-Backed Tokens/Crypto

The application describes a complete technical and business architecture for issuing tokenized RWAs directly from real-time, sensor-verified data. IoT edge hardware (sensor devices, edge routers, and edge gateways using protocols such as Bluetooth, Zigbee, WiFi, Z-Wave, Sub-Gigahertz, Cellular, Satellite, LoRaWAN, Sigfox, or alternatives) continuously collects resource-consumption or performance data from facilities or infrastructure. This data flows to an IoT cloud platform that performs automated calculation, validation, and verification (modeled on established standards for accuracy, sampling, and controls). Upon successful validation, the system generates a digital certificate representing the verified RWA.

This certificate is then tokenized as a value token on a blockchain-based distributed ledger:

- The blockchain records the token as an immutable digital asset, associating it with public-key addresses, cryptographic block linking, timestamps, transaction data, user/equipment identifiers, validation reports, and verification statements.

- Token creation occurs as a primary-market activity: “a blockchain-based storage and transaction mechanism integrated with the IoT cloud platform, the blockchain configured to create and record a value token representing the generated [RWA] certificate as an immutable digital asset on a distributed ledger.”
- The ledger supports registration of all participants and equipment, ensuring the token is backed by verifiable, tamper-proof RWA data and preventing double-spending or fraud.

This constitutes full coverage for RWA tokenization: the automated conversion of physical or measured real-world value into a tradable crypto token or security-like digital asset, issued natively on the blockchain without intermediaries.

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

The application extends tokenization into a fully functional blockchain-based trading platform that operates as a commodity, crypto, or security exchange. Once issued, the value token is listed and traded in real time using standard market mechanisms:

- Supported order types include market orders (executed at the next available price), limit orders, options, forwards, futures, swaps, and pre-market contracts.
- The platform automates matching, execution, settlement, and ownership transfer: “a blockchain-based carbon credit trading platform in communication with the blockchain, the trading platform configured to enable trading of the value token on a commodity or financial exchange through market orders, limit orders, options, forwards, futures, swaps, or pre-market contracts, wherein the trading platform records all buy/sell transactions on the blockchain to reduce fraud, ensure permanent verification, and automate monetization by transferring funds to the seller upon execution of a winning bid while delivering the value token to the buyer.”
- All trades are immutably recorded as new blocks with cryptographic hashing to prior blocks, providing permanent auditability and Byzantine fault tolerance.
- Additional features such as short selling, trailing stop orders, conditional/multi-contingent orders, One-Triggers-the-Other (OTO), One-Cancels-the-Other (OCO), and One-Triggers-a-One-Cancels-the-Other (OTOCO) are explicitly enabled, along with time-in-force options (day, good-’til-canceled up to 180 days, fill-or-kill, immediate-or-cancel, on-the-open, on-the-close).

This creates a seamless, automated exchange environment where tokenized RWAs can be bought, sold, or swapped instantly, with the blockchain serving as both the ledger of record and the settlement layer—eliminating traditional intermediaries while supporting high-frequency, derivative, and institutional trading.

3. Novel Concepts Patentable as of November 7, 2017

As of the November 7, 2017 priority date, several aspects of the disclosure represented novel, non-obvious inventions in the emerging fields of IoT, blockchain, and tokenized finance (well before widespread adoption of RWA tokenization platforms or regulated tokenized asset exchanges):

- Automated, IoT-driven RWA token issuance: Real-time sensor data from edge hardware is used to quantify, validate, and immediately tokenize verifiable real-world value into blockchain-native tokens. This closed-loop automation—from physical measurement to cryptographic token creation—was not standard practice; most early blockchain projects (e.g., Bitcoin, early Ethereum tokens) relied on manual or off-chain oracles rather than integrated IoT validation.
- Blockchain as both issuance registry and native exchange: The same distributed ledger handles token minting (via validation reports and cryptographic registration) and full exchange functionality (order books, derivatives, automated settlement). This “trading platform integrated with the IoT cloud platform” eliminated the need for separate centralized exchanges or custodians, a concept that was still largely theoretical in 2017.
- Immutable, standards-compliant lifecycle for tokenized RWAs: The system embeds validation/verification processes (risk assessment, sampling design, internal controls, assertion evaluation) directly into the token creation workflow on the blockchain, ensuring each token is backed by auditable, tamper-proof data. This addressed a major gap in early crypto markets (lack of real-world backing and regulatory-grade provenance).
- Hybrid traditional + crypto trading mechanics on blockchain: Support for institutional-grade order types, time-in-force rules, trailing stops, contingent orders, and short selling within a decentralized ledger environment provided a bridge between legacy financial markets and emerging crypto rails—novel at a time when most blockchain projects focused solely on simple peer-to-peer transfers or basic smart-contract execution.
- Scalable, fraud-resistant RWA monetization: The combination of IoT edge computing, cloud-based validation, and blockchain settlement enabled end-to-end automation of asset tokenization and trading at industrial scale, with built-in fraud reduction and permanent verification.

These elements were highly innovative in late 2017, as the broader market was just beginning to explore basic tokenized assets (e.g., early ERC-20 tokens) without the IoT integration, standards-based verification, or native exchange capabilities described here.

4. Claim Recommendations from the Attached Document (Broadly Applicable to Tokenized RWAs / Real World Assets)

The attached “Parisii™ Grok Claim Recommendations” document provides 11 strong, independent claims fully supported by the November 7, 2017 disclosure. These claims are drafted to capture the core inventive subject matter and can be readily adapted to the broader context of tokenized RWAs. They are reproduced below (with terminology generalized where appropriate to emphasize tokenized assets / RWAs while preserving the original structure and support):

Independent Claim 1 (System Claim)

A system for automating the generation and monetization of tokenized Real World Assets (RWAs), the system comprising:

an IoT edge hardware layout with sensor devices, edge routers, and edge gateways that measure data associated with any commodity, security, physical asset, financial instrument, or other RWA using wireless protocols;
an IoT cloud platform that receives the data, validates it, and generates a digital RWA certificate;
a blockchain integrated with the cloud platform that creates a value token representing the certificate as an immutable digital asset on a distributed ledger, including registration of users and equipment; and
a blockchain-based trading platform that enables trading of the value token on a commodity, crypto, security, or financial exchange using market orders, limit orders, options, forwards, futures, swaps, or similar instruments, with all transactions recorded on the blockchain to automate ownership transfer and payment.

Independent Claim 2 (Method Claim – Token Creation)

A computer-implemented method for creating a value token representing a verified Real World Asset (RWA), the method comprising:
collecting data associated with any commodity, security, physical asset, financial instrument, or other RWA using IoT sensors, edge routers, and gateways;
sending the data to an IoT cloud platform;
validating the data and generating a digital RWA certificate; and
recording the certificate as a value token on a blockchain ledger, with the token linked to a public-key address and protected by cryptographic blocks to ensure it is verifiable and cannot be double-spent.

Independent Claim 3 (Method Claim – Trading)

A computer-implemented method for trading a value token representing a verified Real World Asset (RWA) on a blockchain-based exchange, the method comprising:
receiving the value token recorded on a blockchain;
listing the token on a trading platform that functions as a commodity, crypto, security, or financial exchange;
processing buyer bids using market orders, limit orders, options, forwards, futures, swaps, or similar instruments;
executing a matching trade, with the blockchain automatically recording the transaction, transferring ownership of the token to the buyer, and sending payment to the seller; and
maintaining all records immutably on the blockchain for verification and audit.

Independent Claim 4 (Article of Manufacture Claim)

A non-transitory computer-readable medium storing instructions that, when executed by processors of an IoT cloud platform, cause the platform to:
receive data from IoT edge hardware associated with any Real World Asset (RWA);
validate the data and generate a digital RWA certificate;
create a value token on a blockchain representing the certificate; and
operate a blockchain-based exchange that supports market orders, limit orders, options,

forwards, futures, swaps, and other instruments to complete automated trading and monetization of the token.

Independent Claim 5 (Business Method Claim)

A business method for monetizing verified Real World Assets (RWAs) using IoT and blockchain, the method comprising:

deploying IoT sensors, edge routers, and gateways to monitor data from any commodity, security, physical asset, financial instrument, or other RWA;

issuing a value token on a blockchain ledger that stores validation data; and

offering the token for trading on a blockchain-based commodity, crypto, security, or financial exchange that executes orders in real time and automatically transfers the token and payment upon a completed trade.

Independent Claim 6 (System Claim – End-to-End IoT-to-Blockchain RWA Token Lifecycle)

A system for automating the generation and monetization of tokenized Real World Assets (RWAs), the system comprising:

an IoT edge hardware layout with sensor devices, edge routers, and edge gateways that continuously measure data associated with any RWA;

an IoT cloud platform in communication with the edge hardware that receives the data in real time, validates it, and generates a digital RWA certificate;

a blockchain-based distributed ledger integrated with the cloud platform that automatically mints a value token representing the certificate as an immutable digital asset, including registration of users and equipment; and

a blockchain-based trading platform in communication with the ledger that lists the value token and executes buy/sell transactions, swaps, or derivative instruments on a commodity, crypto, or security exchange while recording every transfer as a new cryptographically linked block.

Independent Claim 7 (Method Claim – Automated RWA Validation and Token Minting)

A computer-implemented method for issuing a tokenized Real World Asset (RWA) from IoT-sourced data, the method comprising:

deploying sensor devices, edge routers, and edge gateways to collect real-time data associated with any RWA;

transmitting the collected data to an IoT cloud platform;

applying a validation and verification process in the cloud platform to generate a certified RWA certificate; and

automatically minting a value token on a blockchain distributed ledger by creating an immutable record that cryptographically binds the certificate to a public-key address and registers IoT devices and users to prevent double issuance, so that ownership and provenance are permanently verifiable by any participant in the network.

Independent Claim 8 (Method Claim – Real-Time Trading and Settlement of Tokenized RWAs on Blockchain Exchange)

A computer-implemented method for trading tokenized Real World Assets (RWAs) on an integrated blockchain exchange, the method comprising:
receiving a previously minted value token representing a verified RWA certificate recorded on a blockchain distributed ledger;
listing the value token on a blockchain-based trading platform that functions as a commodity, crypto, or security exchange;
processing incoming orders from market participants using market orders, limit orders, options, forwards, futures, swaps, or similar instruments;
automatically matching and executing a trade when order conditions are satisfied; and
recording the executed transaction as a new cryptographically hashed block on the distributed ledger, whereby ownership of the value token is transferred to the buyer and payment is settled to the seller in real time or near real time.

Independent Claim 9 (Article of Manufacture Claim – Computer-Readable Medium for Tokenized RWA Platform)

A non-transitory computer-readable medium storing instructions that, when executed by one or more processors of an IoT cloud platform integrated with a blockchain, cause the platform to perform operations for end-to-end tokenized Real World Asset (RWA) generation and trading, the operations comprising:
receiving data associated with any RWA from IoT edge hardware comprising sensors, routers, and gateways;
validating and certifying the data to produce an RWA certificate;
minting a value token on a blockchain ledger by generating an immutable digital asset record that includes cryptographic ownership keys and validation data; and
operating a blockchain-based exchange layer that supports listing of the value token and execution of market, limit, derivative, and conditional orders with automatic settlement and permanent recording of every transaction on the distributed ledger.

Independent Claim 10 (Business Method Claim – Automated RWA Monetization Cycle)

A business method for monetizing tokenized Real World Assets (RWAs) through an IoT- and blockchain-integrated platform, the method comprising:
instrumenting physical facilities or infrastructure with IoT sensors, edge routers, and gateways to generate verifiable data associated with any RWA;
automatically calculating, validating, and certifying an RWA value from the IoT data within a cloud platform;
issuing a corresponding value token on a blockchain ledger as an immutable representation of the certified RWA; and
providing an integrated blockchain trading venue that functions as a commodity, crypto, or security exchange, whereby market participants may buy, sell, swap, or trade the value token using conventional exchange order types, with the blockchain automatically effecting ownership transfer and fund settlement upon each executed trade.

Independent Claim 11 (System Claim – Hybrid Ledger and Exchange Security Model)

A system for secure tokenization and exchange of Real World Assets (RWAs), the system

comprising:

an IoT data acquisition layer configured to collect and transmit verified data associated with any RWA;

a blockchain distributed ledger configured to mint value tokens representing certified RWAs and to maintain multiple redundant copies across cloud environments for fault tolerance; and

an exchange platform layer built directly on the blockchain that supports full trading functionality—including immediate buy/sell transactions, options, forwards, futures, swaps, and advanced order types—while recording every trade as a cryptographically linked block, thereby eliminating the need for off-chain custodians or centralized clearinghouses.

These eleven independent claims are directly supported by the provisional's figures (IoT layouts, system architecture, validation/verification flows) and detailed descriptions of blockchain integration, token recording, and exchange functionality. They provide robust protection for the tokenized RWA ecosystem as of the 2017 priority date. The claims are fully enabled by the provisional's detailed descriptions of the IoT hardware layouts (Figures 1–2), overall system architecture (Figure 3), ISO-compliant validation and verification flows (Figures 4–14), blockchain integration for token creation and immutable storage, the RWA trading cycle (Figure 16), and the explicit support for comprehensive exchange order types and market mechanisms. They emphasize the novelty of the closed-loop, IoT-driven, blockchain-native RWA tokenization and trading platform that existed as of November 7, 2017.