Bitrue Ventures

BITRUE VENTURES
STATE OF RWA TOKENIZATION 2024

Key Takeaways

- Emergence and Institutional Adoption: RWA tokenization, which involves creating digital representations of traditional assets on the blockchain, has garnered significant attention from major Wall Street institutions like BlackRock and Franklin Templeton, signaling a shift from speculative crypto projects to practical, institutional-grade applications.

- Benefits of RWA Tokenization: RWA tokenization enhances accessibility to financial assets, removes geographical barriers, increases transparency and lowers transaction costs, offers flexible investment options, and ensures clear, secure documentation of transactions.

- Challenges and Risks: Despite its potential, RWA tokenization faces challenges such as difficulties in asset verification across jurisdictions, regulatory compliance issues, unclear legal frameworks, valuation complexities, and custody management difficulties. Additionally, new blockchain solutions are still proving their reliability and cost-effectiveness.

- Market Trends and Future Potential: RWA tokenization is emerging as a key trend with growing institutional interest and could play a crucial role in the next bull run. It offers a significant opportunity to bridge traditional and digital finance, though its success will depend on overcoming current technological and regulatory hurdles.

Overview

This report provides a high-level overview of Real World Assets (RWA) tokenization protocols.

RWA is a term in web3 that refers to assets that are traditionally traded in the financial markets, including, but not limited to, real estate, currencies, equities, fixed income, commodities, credit and luxury goods.

Tokenization refers to the process of minting digital representations of real world assets in the form of programmable tokens on the blockchain.

RWA tokenization projects have garnered significant attention from the finance and crypto communities in the past year with heavyweight Wall Street institutions including BlackRock and Franklin Templeton launching their own on-chain RWA funds. With the involvement of traditional financial institutions in the space, there is a shift in the main focus from crypto's original degenerate culture into projects with more solid use cases such as tokenization.This report shall serve as a comprehensive guideline to the vertical and its most notable projects.

Step	Description	Key Components
1.Asset Due Diligence	a. Ownership Verification - Asset owner provides proof of ownership to the tokenization provider	Ownership certificate
	b. Asset Valuation - Asset owner and tokenization provider agree on the asset's value.	Valuation agreement
2.Tokenization Specification	Select the blockchain and token standard for the asset	Blockchain platform, token standard
3.Data transfer	Transfer off-chain data to on-chain using blockchain oracle services to validate minted tokens.	Oracles: Jiritsu, Chainlink, Pyth
4.Token issuance	Deploy the smart contract on the blockchain to issue the token	Smart contract

Parties involved in the RWA tokenization process include:

- Asset owner
- Custodian
- Token issuance platform
- RWA token marketplace
- Platform users/asset buyers

While exchange traded funds (ETFs) aim to bring on-chain crypto assets off-chain, RWA tokenization protocols provide web3 users with access to traditional financial assets to be traded on the blockchain (on-chain). Although this might seem counterintuitive as the size of the crypto market is miniscule compared to traditional markets, as with previous technological innovations, RWA tokenization platforms could be the future of finance, despite not being widely accepted at present. On-chain funds could have significant advantages compared to traditional ETFs that would revolutionize the financial industry.

There are several benefits to RWA tokenization

a. RWA tokenization increases accessibility to previously exclusive financial instruments for retail traders.
b. RWA tokenization eliminates geographical restrictions of investing.
c. When assets are traded on-chain, transactions become transparent, thus less susceptible to unfair practices, fostering a healthier trading environment.
d. The cost of transacting on the blockchain ideally would be lower in the long run.
e. There is no minimum to investing in on-chain assets, allowing for greater accessibility and flexibility.
f. Trading on-chain increases convenience for market participants, as entry and exit from positions do not require bureautic procedures.
g. RWA tokenization allows for clear and permanent documentation of transactions that lowers the possibility of fraud.
h. Counterparty risk is minimized, as blockchain transactions generally do not require human middlemen.

All of the factors above combined makes RWA tokenization very attractive to institutional and retail investors alike. However, as RWA tokenization protocols are still in development, they also have their own drawbacks.

a. It is often challenging to verify assets across different legal jurisdictions.
b. KYC & AML procedures for cross-border transactions are often costly and inconvenient.
c. The legal landscape of RWA tokens has not been defined clearly.
d. Pricing and valuation could be challenging, especially for illiquid assets such as real estate.
e. Custody agreements are complex, both physical assets and their digital representation must be held by a third-party custodian.

f. Since most blockchain solutions are new, their reliability and cost effectiveness is yet to be proven.

To have a robust decentralized financial market, many corners of the Web3 world will need more development, although RWA tokenization protocols are at the forefront of this revolution, these platforms still require accommodating external services.

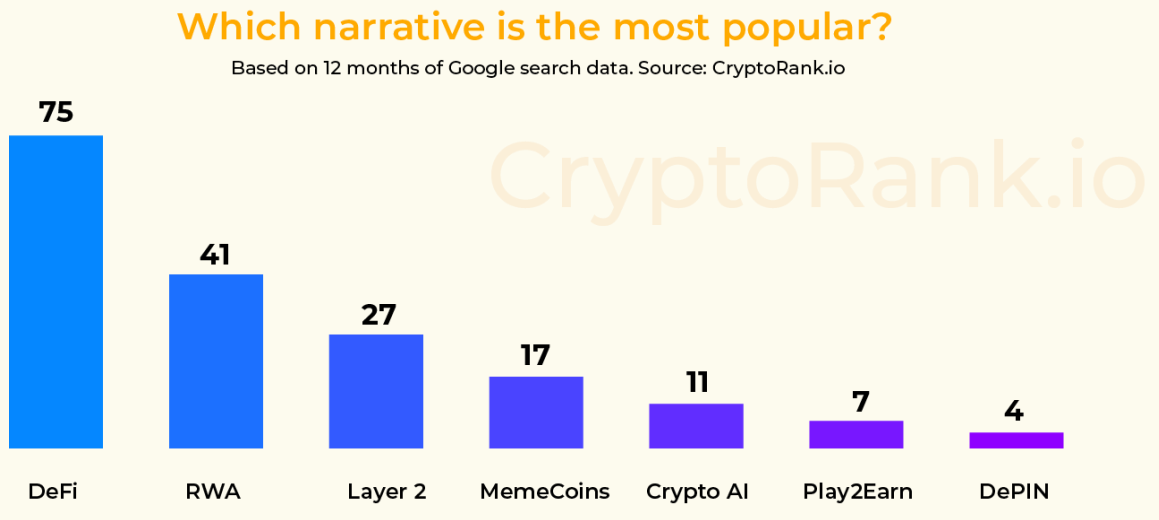
Many tokenization providers include value-added services in their product suite, such as having a native L1 blockchain, in-house custody services, having its own asset marketplace and fractionalization services.

Good RWA tokenization protocols aim to be as decentralized as possible, making sure that most parts of the transaction are done on-chain, however as current web3 infrastructure is not ready for fully on-chain transactions, it is inevitable that some of the tokenization operations will be done off-chain.

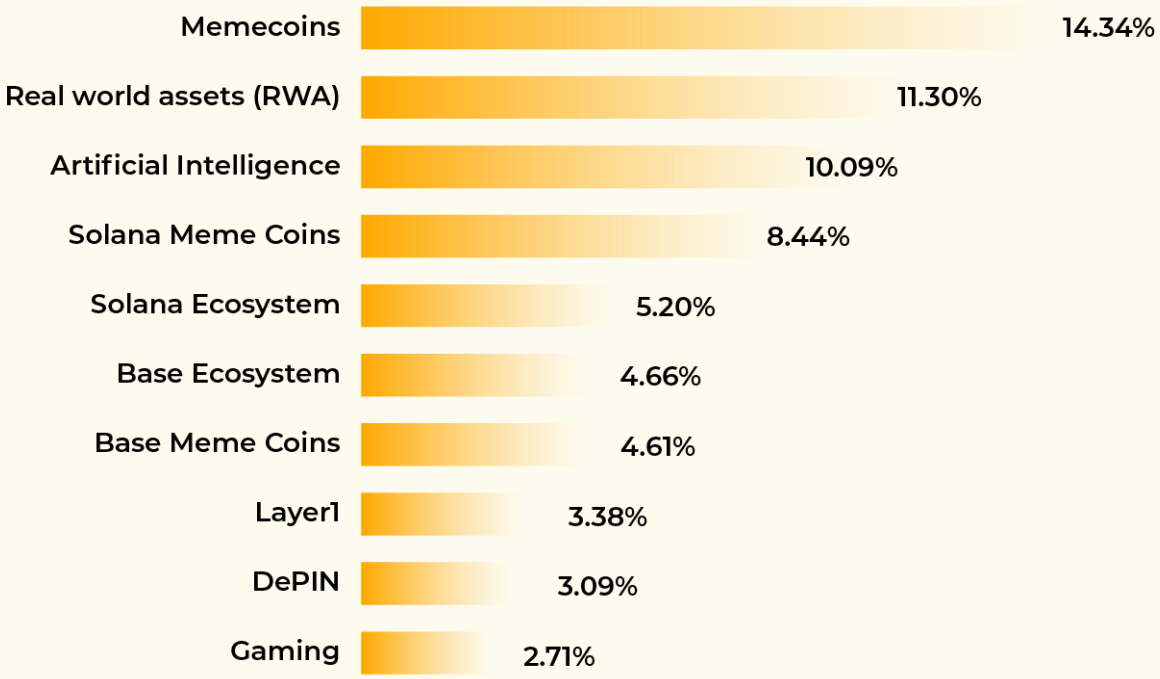
Despite all of this, we strongly believe in the potential of RWA tokenization. This vertical's use case is solid and straightforward, and is pivotal to the adoption of cryptocurrencies and blockchain in the long run.

Vertical overview

RWA tokenization is a key sector for the upcoming bull run, this can be seen through the growing institutional interest in the technology. In contrast to the recent oversaturation of AI and Layer-2 scaling solutions, RWA has captured significant market attention since the beginning of the year, establishing itself as a prominent and dynamic topic within the cryptocurrency ecosystem.



Source:CryptoRank



Most popular crypto narratives by traffic share in Q2 2024.Source: CoinGecko

There are several key factors that are detrimental to the narrative's success in the following bull run.

- RWA tokenization has one of the most direct use cases in terms of decentralized finance for now. While decentralized exchanges including decentralized perpetuals, futures, options, and yield farming have been moved on-chain for a while, these financial services do not constitute the traditional financial market and are limited to only crypto native assets. It is important to remember that the crypto market is much smaller than traditional financial markets.There is still a huge amount of capital yet to be brought on-chain. Tokenizing traditionally traded assets on-chain will open the pathway for non-crypto native capital to flood the market.

-RWA tokenization has not had its narrative trending in the previous bull runs, whereas other verticals have had their moment, AI x crypto trend is also slowing down.

-The RWA tokenization trend is further propelled by a growing interest in blockchain based currencies and trading instruments from Wall Street giants. To list down a few:

- Goldman Sachs rolling out 3 major tokenization projects, including its game-changing Bitcoin ETF
- Bitcoin ETF setting new records as one of the most successful ETFs
- BlackRock CEO Larry Fink officially recognizes Bitcoin as an asset class, a move welcomed by Dell CEO.

- State Street plans to create stablecoin and crypto settlement options
- JP Morgan and Citibank launch Project Guardian for cutting-edge Institutional DeFi and FX solutions.
- HSBC offers digital asset custody for tokenized gold to Hong Kong retail investors
- PayPal's $PYUSD stablecoins now live on
- Ethereum and Solana mainnet
- Bank of America secures 80 blockchain-related patents

What kind of projects belong to the RWA tokenization vertical?

According to our research, we have categorized projects that fall under the RWA tokenization narrative into two groups:

- Tokenization Providers
  - Centralized vs Decentralized Tokenization Platforms
  - General vs Specialized Tokenization Platforms
- Traditional banking funds
- Infrastructure
  - Oracles
  - Data Storage
  - Custodians
  - Blockchains

A Tokenization Providers

Tokenization providers are platforms that facilitate the minting and distribution of tokenized real-world assets.

They generally provide services including:

- Tokenized asset minting
- Fractionalization of underlying assets
- Tokenized asset marketplace
- White label minting & marketplace solutions
- In-house custody

However, not all tokenization providers render the above services, some tokenization providers focus solely on minting of tokenized assets.

Centralized vs Decentralized Tokenization Platforms

The first category includes projects that enable assets to be minted on-chain, however, operations on the onboarding and offboarding of these assets are still mainly done on centralized web2 servers. While the latter refers to projects that have succeeded in bringing most parts of its operations on-chain. While we categorize the protocols into centralized and decentralized, most of these protocols are not fully centralized or decentralized. This is because with the current state of development in the blockchain industry, fully web3 native or on-chain protocols are still hard to achieve, as computing often is cheaper using centralized alternatives and notably less complicated. There are several areas in which RWA tokenization protocols could be distinguished into centralized and decentralized.

1. On-chain transparency/use of public blockchain networks
   Most RWA projects that are truly decentralized usually would have tokens minted on a public blockchain, where transaction ledgers are transparent and easily accessible to the public. Whereas centralized tokenization providers typically have their own blockchain that is inaccessible to retail users.

2. Custody
   Centralized tokenization providers rely on a third-party custodian, whereas decentralized protocols have assets held under personal decentralized storage of the token holders.

3. Regulatory compliance
   Centralized solutions operate under a certain jurisdiction's law. Some providers, such as Tokeny, adhere to global compliance standards, depending on the jurisdiction of the registered assets.

   Because of this, centralized tokenization providers typically require a KYC/AML procedure for users signing up to the platform. This means that investors could not be anonymous.

To simplify the classification, we are going to define centralized providers as projects that **require investors to follow through a KYC procedure** before registering.

Centralized	Decentralized
• 10XTS • ADDX • Ainslie Crypto • Aktionariat • AllianceBlock • Alphaledger • AlphaPoint • Arca US Treasury Fund • Archax	• Aconomy • AmFi • Alta • Anzen • Atlendis • Backed Finance • Bitbond • Blockcellar • Bluejay Finance

- Arf
- Bankex
- Blocksquare
- Bondblox
- Brale
- Brickken
- Brightvine
- Bru Finance
- BSOS
- Canton Network
- Cerchia
- dclex
- DigiFT
- DigiShares
- Ebric
- Ekta
- Enigma Vault
- eNor
- Estate Protocol
- Flowcarbon
- Fnality International
- Fortunafi
- Franklin Templeton
- Frictionless
- Fusang
- Hamsa Pay
- Hashnote
- Helix
- HoneyBricks
- HouseAfrica
- Intain
- INX Digital
- InvestaX
- Jia
- Liquid Mortgage
- Lofty
- Mountain Protocol
- NYALA
- Oasis Pro
- Ownera
- Paxos
- PeerHive
- Petale
- Polymath
- Pontoro
- Propy
- PV01
- Realio Network
- RealT
- RealX

- Canza Finance
- Carapace Finance
- CellarDAO
- Centrifuge
- CitaDAO
- Clearpool
- CredeFi
- Credix
- Cogito Protocol
- Dexstar
- DEFYCA
- Elysia
- Ensuro
- Fabrica
- Florence Finance
- Frigg
- Goldfinch
- Homecoin
- Huma Finance
- KlimaDAO
- Maker
- Maple
- Matrixdock
- Maxos
- Meld Gold
- Obligate
- Ondo Finance
- OpenEden
- Parcl
- Pearl Exchange
- Polytrade Finance
- PurpleFi
- Sapling
- Solv Finance
- Tangible
- Toucan Protocol
- TrueFi

• Riddle&Code • Robinland • SEBA Bank • Securitize • Securrency • Smart Token Labs • Soil • Spydra • Stobox • STOKR • Structure • Superstate • Taurus Platform • Talium Assets • Texture Capital • Tokeny Solutions • TOKO • tZERO • Vertalo • WeOwn • WisdomTree • Yieldteq • Zivoe Finance	

General vs Specialized Tokenization Providers

While most platforms can tokenize various underlying assets, tokenization providers may be differentiated by the specific asset types they prioritize.

Asset Class	Specialized Tokenization Providers
Real Estate	• DigiShares • Ebric • Ekta • Estate Protocol • Honey Bricks • House Africa • InvestaX • Realio Network • RealT • RealX • Robinland • LandX

Equities	• Aktionariat • Archax • Briccken • Canton Network • DigiFT • Hashnote • INX Digital • Ownera • Paxos • Petale • Polymath
Commodities	• Ainslie Gold • LandX
Fixed Income	• AlphaLedger • Arca US Treasury Fund • Bondblox • Brale • Mountain Protocol • Ondo Finance • PV01 • Superstate • Yieldteq
Private Credit	• AllianceBlock • Arf • BSOS • Helix • Intain • Maple • Pontoro • SEBA Bank • Zivoe Finance
Forex	• Fnality International • Paxos • SEBA Bank
Others	• Enigma Vault • Flowcarbon

List of Notable Tokenization Providers

Below are several examples of RWA tokenization projects that have gathered widespread attention across the years.

1. Securitize
   Founded: 2017
   AUM:-
   Country: United States

   Securitize is one of the earliest blockchain tokenization platforms, first launched in 2017. The firm became the first to issue a tokenized S&P 500 index on the blockchain. Throughout the years, Securitize has partnered with notable financial institutions including Hamilton Lane and BlackRock.

2. Tokeny Solutions
   Founded: 2017
   AUM: €28 billion
   Country: Luxembourg

   Tokeny Solutions is an award-winning fintech firm that provides compliant tokenization with the open-source ERC-3643 token standard and advanced white-label software solutions for financial institutions. The firm has tokenized a total of $28 million in assets throughout its years of operations. Tokeny also has white label marketplace solutions for other tokenization platforms to easily launch their own marketplace.

3. Ondo Finance
   Founded: 2021
   AUM:-
   Country: United States

   Perhaps the most well-known name amongst RWA tokenization protocols, Ondo Finance has made headlines over the past year. Bringing US dollar and US treasuries yield on-chain, the platform prides itself on being institutional grade, backed by a team of experienced executives with backgrounds across leading institutions like Goldman, Bridgewater, Millenium, and BlackRock.Ondo Finance is the platform behind the decentralized lending protocol Flux Finance.

4. INX Digital
   Founded: 2018
   AUM: -
   Country: Canada

   Founded by ILS Brokers' CEO Shy Datika, INX Digital is currently one of the biggest names in the industry. The INX Token was the first SEC-registered security token to IPO

on the blockchain. The firm is currently working with JP Morgan, Morgan Stanley, Barclays, BNP Paribas, and Credit Suisse in bringing TradFi capital on-chain.

5. LandX
Founded: 2019
AUM:-
Country:-

LandX allows DeFi users to invest in agricultural commodities backed by real farmlands. Users can invest in soy, corn, and other investable commodities while receiving up to 18% in yield.The project has previously trended on X due to its unique product proposition.

B Tokenization Infrastructure

Type	Projects
Oracles	• Chainlink • Jiritsu Network • Pyth
Data Storage	• Arweave • Filecoin • Storj
Custodians	• Copper.co • Fireblocks • HexTrust • Taurus
Blockchains	• ERC3643 • Realio Network • Plume Network • Quai Network

1. Oracles

Oracles are an essential part of the tokenization process. Oracles bridge data from off-chain sources on-chain. This is crucial especially for real-world assets, as price feeds are often off-chain. Oracles fetch real-time data of the underlying assets, allowing RWA tokenization platforms to calculate interest rates, collateralise loans, and execute trades involving RWAs. Other than that, oracles are also used to verify ownership of underlying assets and verify the authenticity of legal documents associated with the assets. In the

crypto world, oracles are usually decentralized and trustless, meaning that its operations are done via automated smart contracts.

2. Data Storage

   As with other DeFi projects, data storage plays an important role in ensuring the smoothness of operations among real world assets (RWA) protocols. It serves as the underlying structure for recording, verifying, and controlling asset data within the blockchain. Ideally, tokenization protocols should utilize on-chain data storage solutions such as Filecoin or Arweave, to maintain the utmost degree of decentralization.

3. Custodians

   While some tokenization protocols have in-house custody solutions, these platforms also have the option of relying on a third party custodian instead. Custodians safekeep physical and digital assets protecting them from loss, damage, or theft. Custodial solutions will need to adhere to regional jurisdictional law, providing assurance to investors that their assets are being overseen by a legal body.

4. Blockchains

   With the increasing number of real world asset protocols in the space, there is an increasing number of RWA tokenization specialized blockchains. Some tokenization providers have developed their own layer 1 blockchain or ledger solutions. Bigger centralized platforms such as 10XTS for example, host their own network called the XDEX to facilitate transactions and storage of metadata related to its underlying assets. Another example, Realio Network, is a layer 1 blockchain specifically designed for RWA tokenization

Current Market Landscape Highlights

- Aggregate AUM across protocols: Estimated between $5 billion - $10 billion (various sources)
- RWA Market Capitalization as of August 2024: $6,685,527,935
- Market leader: Ondo Finance (MCap: $960,835,108)
- Most tokenized asset: Home Equities
- Least tokenized asset: Unlisted Equities

Project Highlight: Jiritsu Network

Bitrue Ventures invested in Jiritsu Network, a ZK-MPC oracle created to facilitate RWA tokenization by streamlining the process of data feed transfer from off-chain sources to on-chain sources, leading to a resource efficient process.

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We invested in the project because we believe that Jiritsu has the potential to become the most optimal oracle for real-world asset (RWA) projects. Jiritsu implements StarkWare's zero-knowledge multi-party computation (ZK-MPC) technology in its data verification process. Instead of onboarding the whole dataset needed to verify an underlying asset,cryptographic proofs are generated to encapsulate verified asset information and compliance policies, enhancing security and confidentiality. By efficiently combining and verifying multiple transactions into groups, this specialization greatly improves the system's capacity to handle a high volume of transactions, thus increasing scalability. Compared to existing decentralized oracle solutions like Chainlink and Pyth, Jiritsu aims to be more cost-efficient to manage tokenization of RWAs using ZK-MPC.

As a tokenization infrastructure project, Jiritsu's clients include some of the biggest names in the sector, such as Securitize, Republic, Oasis Pro, and Maple.

Although Jiritsu's use cases are not limited to real world assets, the company is focusing its effort on the sector, and we are more than excited to assist them in the process.

The team behind Jiritsu are traditional finance veterans and entrepreneurs with a proven track record with 4 successful exits.

Conclusion

Real world asset (RWA) tokenization is one of the highly anticipated narratives in the upcoming bullrun. As this cycle is very much different from the previous crypto cycles, we are seeing an unprecedented inflow of institutional money in the markets, directly contributing to a shift in the market structure. While memecoins remain a key attractor for retail traders, institutional investors are more interested in projects with solid, tangible use cases. RWA tokenization presents a straightforward and applicable solution to digitizing the financial markets, making this sector very attractive to serious investors.

As with any other web3 verticals, the ecosystem landscape of RWA tokenization protocols is rapidly evolving; we now have hundreds of different protocols that could be categorized into tokenization providers and tokenization infrastructures. Both sectors are very competitive, with various teams providing various solutions to bring offline assets on-chain. While there is no one solution that fits all, each of the projects is unique and each has its own advantages and disadvantages. While both sectors provide a lucrative investment opportunity, Bitrue Ventures

has decided to invest in an RWA-focused oracle and layer1 project, Jiritsu Network, believing in their technology and potential.

This report was produced by Bitrue Ventures

Launched in Q2 2024, Bitrue Ventures is the investment and research division of the Bitrue exchange with a mission of identifying and bringing to fruition cutting edge technology in the cryptocurrency space. It is staffed by industry experts with an average of 12 years experience in the technology sector and 4 years working in blockchain technology. By collaborating with leading blockchain ecosystems and seasoned investors, we strive to create a thriving environment for projects that can transform the digital landscape. Bitrue Ventures is committed to driving long-term value and fostering a vibrant blockchain community.