



The blockchain for banks

**The definitive
guide to taking
advantage of the
tokenization
of real assets.**



2025

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Preface



By Marcos Viriato - Founder

We are living through a historic moment of transformation in the global financial market, where the tokenisation of real-world assets (RWA) emerges as one of the sector's most promising innovations.

Since I began my journey in the digital assets universe in 2019, through Parfin, I believe this is the moment of greatest potential I have ever observed for the development of this segment from both technological and regulatory perspectives.

For years, financial institutions faced significant limitations in developing the tokenisation of their assets due to the absence of clear regulatory frameworks, even with the substantial operational and financial efficiency gains that these solutions provide.

Recent years have marked a turning point driven by two major factors: the pioneering initiatives of Franklin Templeton (BENJI) and BlackRock (BUIDL) in tokenising funds backed by U.S. Treasury securities, and Donald Trump's victory in the 2024 elections, which promoted significant changes in the U.S. Securities and Exchange Commission (SEC), creating a more favourable regulatory environment for digital assets.

The shift in regulatory stance, especially with the new American administration and initiatives like the Genius Act, has created an environment of greater clarity and confidence for the entry of large financial institutions, whose impact should intensify even further over the next three years.

Brazil is also at the forefront of this new segment, where the development of a tokenised financial ecosystem through DREX could represent a significant leap for the traditional financial market, enabling both greater operational efficiency with instant settlement of bonds and stocks 24/7 and the possibility of accessing new products through the tokenisation of private credit and other alternative assets.

For investors, I believe RWAs represent an unprecedented democratisation of access to investments historically restricted to high-net-worth individuals.

The tokenisation of assets such as credit card receivables, fixed-income securities, and other financial instruments paves the way for individual investors to access secure and attractive returns directly on-chain (yield bearing assets), with returns superior to traditional products and greater transparency.



Furthermore, the ease of conversion between different currencies and assets, such as instant dollar-to-euro exchange, eliminates operational barriers and high costs of conventional financial systems, creating a truly global and accessible environment.

From an institutional perspective, tokenisation represents a revolution in liquidity management and the creation of new capital markets. The possibility of fractionalising and distributing previously illiquid alternative assets, such as private credit, commercial receivables, and other investment classes, allows financial institutions to significantly expand their investor base and create more diversified products.

This expanded reach, combined with blockchain's operational efficiency, not only reduces intermediation costs but also accelerates settlement processes and provides real-time transparency, establishing the foundation for a more efficient and inclusive financial system in the coming years.

I recognise that the journey ahead presents significant obstacles, including educational gaps and operational complexities that demand careful and robust solutions.

I view tokenisation not as a disruptive revolution that destroys existing structures, but as a natural evolution that harmonises the best consolidated practices of the traditional financial system with the benefits of blockchain technology.

Given this scenario of accelerated transformation, it becomes essential for institutional and individual investors to understand not only the opportunities but also the practical and strategic mechanisms to navigate this new financial paradigm. The tokenisation of real-world assets is no longer a distant promise – it is a reality that is redefining how we think about ownership,

liquidity, and investment access in a market that already has over \$250 billion in assets on blockchain.

This report was developed to offer a comprehensive and practical view of the RWA universe, exploring everything from technological fundamentals to the most advanced implementation strategies. Throughout the following pages, you will find detailed analyses of real-world use cases, emerging regulatory frameworks, and best practices to leverage the opportunities this market offers.

It is with great satisfaction that we present this study in partnership with On Crypto Research, as one of Rayls' major missions is to accelerate institutional adoption of tokenised assets through secure technologies that comply with the highest regulatory standards. The future of tokenisation has already begun, and those who understand its nuances today will be at the forefront of tomorrow's opportunities.

Introduction • What are RWAs?

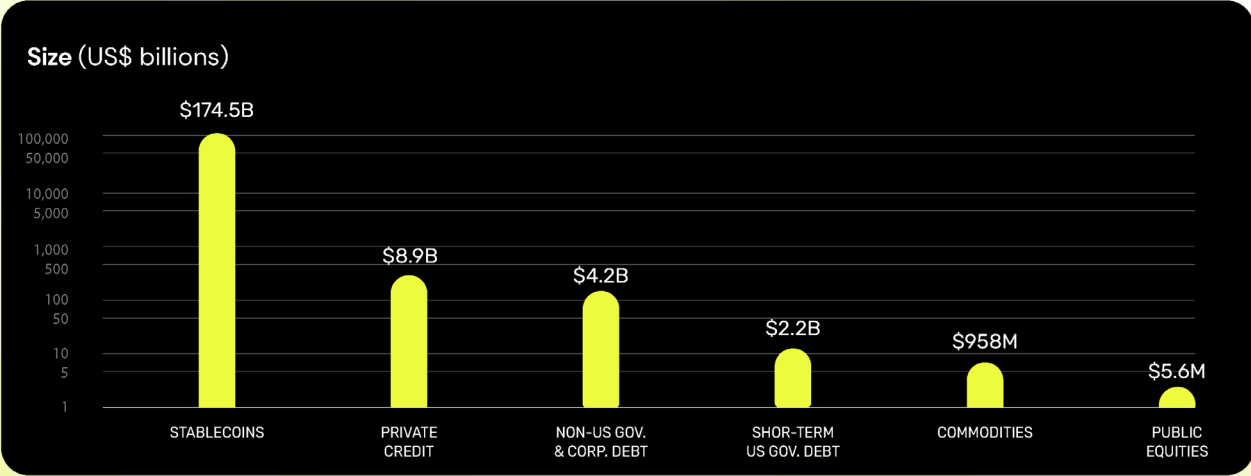


Real World Assets (RWA) refer to tangible or intangible assets that exist in the physical world and are digitally represented on a blockchain through a process called tokenisation.

This digital representation allows such assets to benefit from the inherent characteristics of blockchain technology, such as transparency, immutability, programmability, and global accessibility. Tokenisation is the fundamental process that enables the conversion of a traditional asset into a digital token. This process involves creating a unique and verifiable digital record on a programmable ledger, such as a blockchain or Distributed Ledger Technology (DLT), which represents ownership or rights over the asset.

The generated token can then be issued, stored, and traded efficiently and transparently, allowing the user to possess ownership of the asset. Currently, there are approximately \$250 billion in tokenised assets distributed across public blockchains such as Ethereum and Solana, with their primary use case being stablecoins (tokens backed by the dollar or other fiat currencies).

Distribution of tokenised assets



Bar chart is log scale. Pie chart is linear scale. RWA.xyz, (September 2024) & ICMA, (June 2024) Source: State of Asset Tokenization 2024



Real-world assets eligible for tokenisation are diverse and encompass both physical goods and financial rights and instruments. There are three main categories of financial assets where tokenisation cases have already been observed:

Tangible Assets: Real estate, commodities (gold, silver, oil), artwork, collectibles, and other physical goods.

Financial Assets: Debt securities, stocks, investment funds, derivatives, amongst others.

Intangible Assets: Intellectual property (patents, copyrights, trademarks), carbon credits, licences, receivables contracts, amongst others.

The main purpose of Real World Assets (RWAs) is to bring to the traditional asset market the efficiency, liquidity, and programmability provided by the digital world, overcoming the limitations of traditional financial system and developing broad accessibility for assets.

To understand the true value of tokenisation, it is essential to understand how the asset registration process in the financial market has evolved over the decades. RWAs represent the next stage in the evolution of financial assets, a transformation that can be divided into three distinct phases:

1. Paper Certificates (Pre-1980s)

In the era of physical certificates, asset ownership was recorded exclusively on paper documents.

This system presented significant limitations: processes were slow, involved high storage and handling costs, and were prone to human error, document loss, and fraud. Property transfers required physical presence and manual authentication, creating considerable barriers to efficient trading. However, it marked the beginning of capital market financing structures.

Advantages: Tangible physical record, direct ownership control.

Challenges: Slow processes, high costs, risk of loss/fraud, geographical barriers, difficulty in verification.

2. Digitalisation (1980s–2010s)

The financial market underwent a digital revolution, associated with the rise of the internet.

Ownership records migrated to centralised electronic systems, eliminating the need for physical certificates.

This transition increased operational efficiency and reduced risks associated with handling physical documents.

The system still depends on multiple intermediaries for transaction validation and settlement, maintaining timeframes of two business days or more for operation completion.



Advantages: Greater operational efficiency, reduced storage costs, lower risk of physical loss.

Challenges: Dependence on multiple intermediaries, still lengthy settlement periods, risk concentration in centralised systems, high intermediation costs.

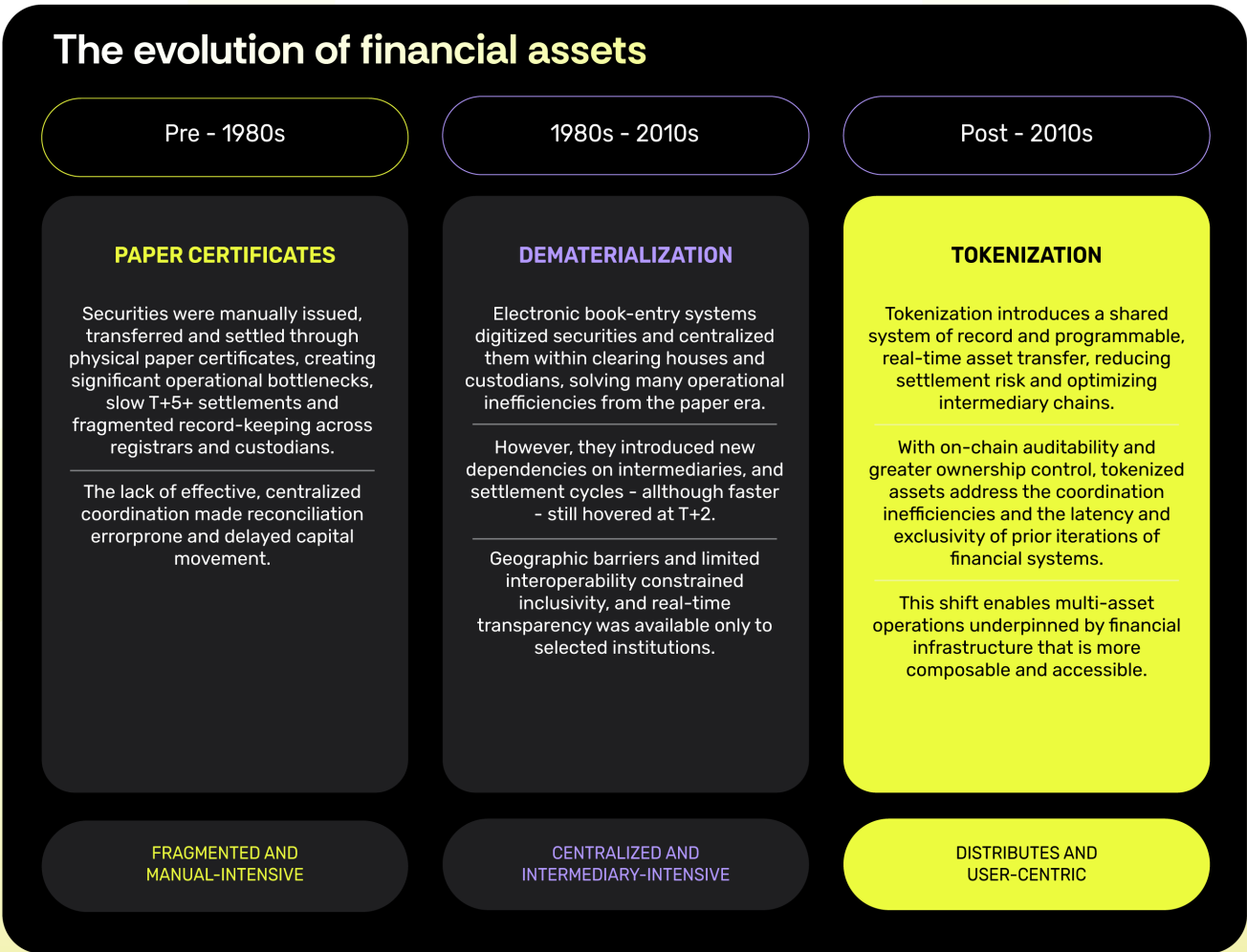
3. Tokenisation (Post-2010s)

The third and current phase represents a paradigmatic revolution in asset registration. With the advent of blockchain and programmable contracts, ownership is now recorded digitally through tokens, creating a decentralised and programmable system. This innovation enables real-time settlement, eliminates the need for traditional intermediaries, increases transaction transparency, and reduces operational costs.

Advantages: Instant settlement, total transparency, reduction of intermediaries, programmability, 24/7 global access, asset fractionalisation.

Challenges: Regulation still under development, technological complexity, cybersecurity risks.

Evolution of the financial system



Source: WEF – Asset Tokenization in Financial Markets



The transition to real-world asset tokenisation brings with it five fundamental advantages that transform the dynamics of financial markets:

Liquidity: Tokenisation converts traditionally illiquid assets into tradeable tokens 24/7. A commercial property, which previously would take months to sell, can have its fractions traded instantly, creating an active secondary market and potentially reducing the time to convert to cash.

Reach: Tokens can be fractionalised into very small denominations, allowing investors with different capital levels to participate in previously exclusive markets. This democratisation of access creates a much broader and more diversified investor base.

Global Accessibility: The digital nature of tokens eliminates geographical barriers. Investors from anywhere in the world can access investment opportunities without the limitations of traditional markets.

Technical Standardisation: Tokenisation uses standardised protocols that facilitate interoperability between different platforms and systems. This standardisation reduces operational complexities and creates scale efficiencies that benefit the entire ecosystem.

Operational Efficiency: The automation provided by smart contracts eliminates many manual processes and intermediaries, reducing operational costs by \$15 to \$20 billion per year, according to estimates from The Fintech 2.0 Paper study conducted by Santander in 2023.

Some examples of this impact would be dividend payments, contract execution, and other routine operations that can be automated, minimising errors and accelerating execution.

The main objective of RWA tokenisation is to bring to the traditional asset market the efficiency, liquidity, and programmability provided by the digital world, overcoming the limitations of traditional financial systems and developing broad accessibility for assets.

This represents a business opportunity for financial institutions that can offer new products to their clients with higher returns and enable accessibility to investments that were previously restricted to large investors.

At this moment, we can already observe some clear use cases that represent real opportunities that are already being operationalised in the RWA market.

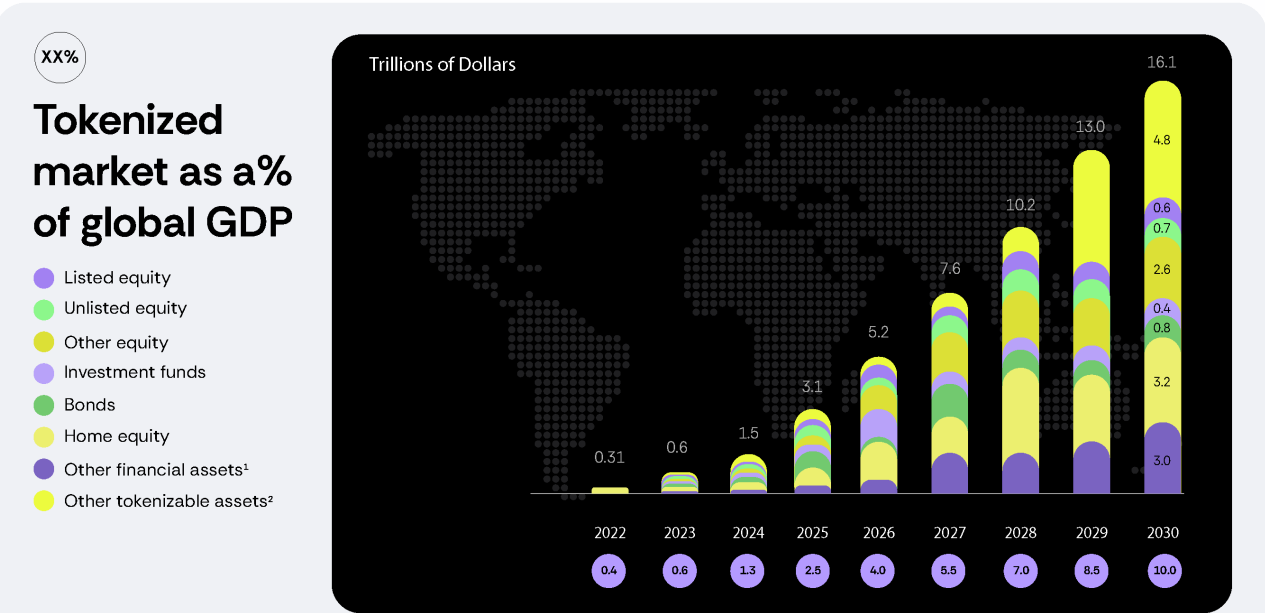
The Growth of the RWA Market



When analysing the potential of the real-world asset tokenisation market, the main addressable markets for this segment include global commodities (\$142 trillion), global equity market (\$124 trillion), global real estate market (\$11 trillion), and private credit (\$2 trillion), totalling over \$261 trillion in assets that could benefit from this solution.

Institutional projections for sector growth are consistent across different organisations. Standard Chartered projects that the tokenised assets market will reach \$30 trillion by 2034, whilst Boston Consulting Group estimates \$16 trillion by 2030.

Projection of tokenised assets market growth



Source: [BCG - On Chain Asset Tokenization](#)

These forecasts reflect analyses based on observed growth and increasing adoption by institutional investors, with the main drivers being operational efficiency and liquidity gains for illiquid assets and the distribution of dollarised assets to emerging markets such as Latin America and Asia.



I believe three use cases that highlight the potential of this segment are:

BlackRock

BlackRock USD Institutional Digital Liquidity Fund (BUIDL): Launched in 2024, this fund already accumulates \$2.8 billion in assets under management, offering on-chain yields from U.S. Treasury securities, real-time peer-to-peer transfers 24/7/365.



Paxos Gold (PAXG): Launched in 2019, this pioneering project holds \$860 million in assets, offering a way to access physical gold through blockchain. Each PAXG token is backed by one troy ounce of gold, stored in LBMA vaults in London, ensuring that PAXG holders effectively own the underlying physical gold.



USD Coin (USDC): Launched in 2018, it represents one of the sector's greatest successes with \$59 billion in assets under management. USDC is 100% backed by dollars and highly liquid equivalent assets. Recently, Circle, the company responsible for the stablecoin, conducted one of the most successful IPOs in the United States in recent years.

It's important to highlight that there is growing corporate interest in tokenisation solutions. According to a study conducted by Coinbase with Fortune 500 company executives in June 2024, 70% of executives are already exploring stablecoin solutions in their companies, 86% recognise the potential benefits of blockchain technology, and 35% express interest in asset tokenisation operations.

The convergence between addressable markets, growing corporate interest, and proven use cases creates favourable conditions for RWA market expansion.

The sustainable growth of the sector will depend on continued regulatory development, maturation of technological solutions, and expansion of institutional adoption. It's important to understand the current state of this market and its main solutions to understand the best way to position yourself in this innovative segment.

State of the RWA Market



The Real World Assets market has evolved over recent years, diversifying in terms of applications.

This market can be divided into five main applications: **stablecoins**, **private credit**, **commodities**, **institutional funds**, and **tokenised government bonds**.

Stablecoins – This asset class represents the most consolidated application within this sector.

Essentially, they are digital tokens that maintain parity with traditional currencies, with the U.S. dollar being the most common reference, through backing mechanisms that include cash reserves, short-term government securities, and other high-quality liquid assets. This model ensures value stability in a digital ecosystem (crypto assets) historically characterised by extreme volatility.

The functioning of stablecoins is based on different stabilisation mechanisms:

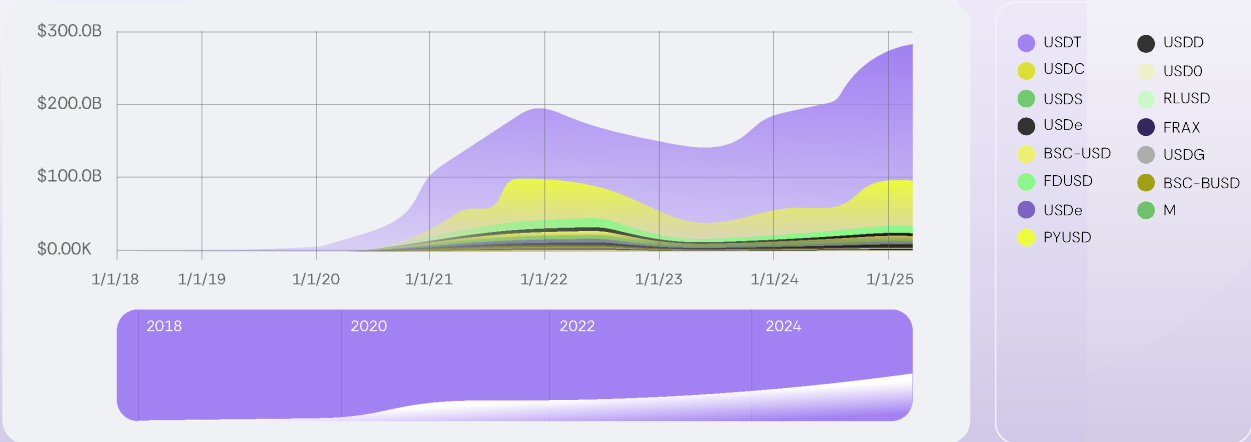
Fiat-collateralised stablecoins: Maintain reserves equivalent to the value in dollar-equivalent assets (corporate debt securities, U.S. Treasury debt securities, amongst others) of the tokens in circulation, regularly submitting to audits to prove backing, with USDT and USDC as main examples.

Algorithmic stablecoins: Use smart contracts and supply and demand mechanisms to maintain parity, with FRAX as the main example.

Crypto-collateralised stablecoins: Use other digital tokens as collateral to maintain stability, generally requiring over-collateralisation due to the volatility of underlying assets, with DAI and USDe as main examples.

Stablecoins - Market Cap

Stablecoin Metrics



Source: RWA – Stablecoins



The relevance of stablecoins has exceeded market expectations, reaching a historic milestone in 2024 by processing \$27.6 trillion in transaction volume, surpassing the combined volume of Visa and Mastercard by 7.68%.

This growth represents a fundamental transformation in the global payments landscape, demonstrating that stablecoins have evolved from technological experiment to mainstream financial infrastructure in less than a decade.

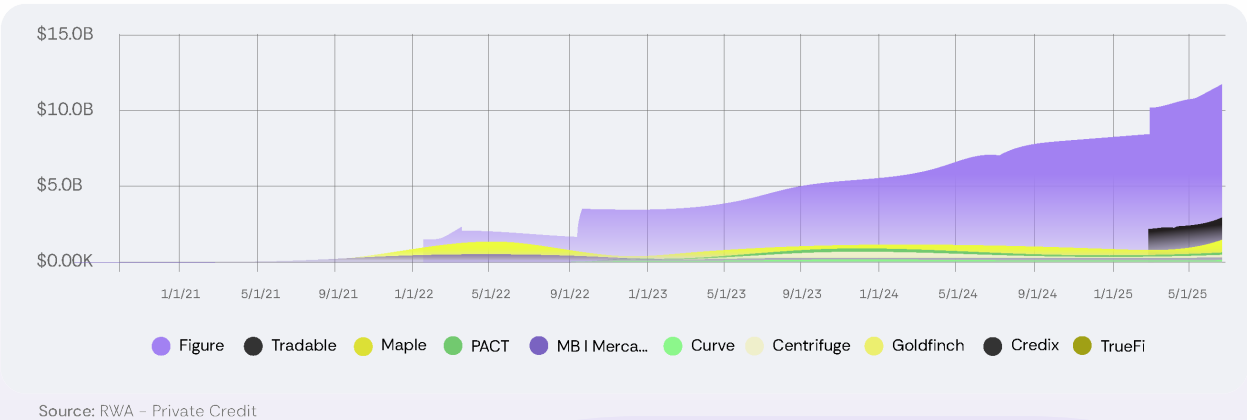
Currently, they play a fundamental role in everyday financial transactions, settlement of operations between exchanges, corporate treasury management, and international payments, offering superior speed and efficiency compared to traditional banking systems.

Private Credit – This category represents one of the most promising applications of tokenisation, connecting investors directly with corporate financing opportunities through blockchain protocols.

Tokenised private credit allows companies to access capital without depending exclusively on the traditional banking system, whilst offering investors attractive yields backed by real loans.

Tokenised private credit

Private Credit Metrics



The sector holds \$13.83 billion in active loans out of a total of \$25.38 billion in total loan value, with an average rate of 10.32% APR distributed across 2,664 loans (RWA. xyz | Private Credit).

In 2024, the private credit segment grew 76% in outstanding loans, consolidating itself as a fundamental pillar of the RWA ecosystem through platforms like Maple, Goldfinch, and Centrifuge that have developed robust frameworks for risk analysis and default management.



Commodities – They represent the digitalisation of tangible physical assets, offering investors exposure to precious metals, energy, and agricultural products through tokens backed by real reserves.

The tokenised commodities market grew 5% in 2024, reaching a capitalisation exceeding \$1 billion, with gold and precious metals leading the segment as a hedge against market volatility.

This category offers unique benefits including fractionalisation of traditionally inaccessible assets, ease of transfer and digital custody, eliminating logistical complexities of physical storage.

Commodity tokenisation has attracted established financial institutions such as HSBC, Paxos, and Tether, validating the model through products that combine tangible asset security with blockchain operational efficiency.

Institutional Funds – This category encompasses the digitalisation of alternative investment vehicles, including hedge funds, venture capital, private equity, and other instruments traditionally accessible only to qualified investors.

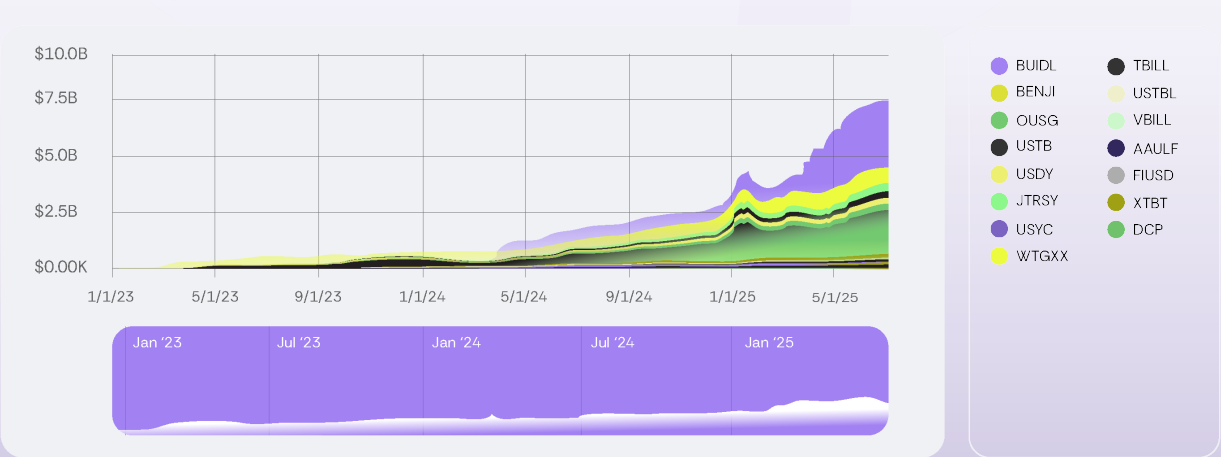
The tokenisation of these funds offers greater transparency through smart contracts, reduced operational costs via process automation, and automated portfolio rebalancing.

Significant examples include the collaboration between Citibank and Ava Labs in February 2024 for a proof-of-concept of tokenised private equity funds on the Avalanche blockchain, aimed at improving liquidity and accessibility in the sector.

Tokenised Government Bonds – They constitute one of the fastest-growing categories in the RWA ecosystem, digitally representing U.S. Treasury securities on public blockchains.

Tokenised government bonds

Treasury Product Metrics



Source: RWA – US Treasuries

The current market has a total value of \$7.39 billion distributed across 47 assets, with an average yield of 4.13% and a base of 42,047 holders (RWA.xyz | Tokenised U.S. Treasuries).

The tokenised Treasury securities segment grew an impressive 179% in 2024, demonstrating strong institutional demand for instruments that combine government asset security with blockchain operational efficiency.

The main validation of this segment can be attributed to the positioning of major asset managers that sought to develop products in this format, such as BlackRock USD Institutional Digital Liquidity Fund (BUIDL) and Franklin Templeton OnChain U.S. Government Money Fund (BENJI), which together hold \$3.6 billion in assets under management.

RWA Protocols



The real-world asset tokenisation market has relevant companies that enable the development of this segment. I believe there are three protocols that need to be highlighted:



Securitize – This is one of the most established platforms in the RWA tokenisation ecosystem, specialised in digitising capital market assets through secure and regulated blockchain infrastructure.

The company closed a \$47 million investment round led by BlackRock, validating its position as one of the sector leaders.

Securitize works with major asset managers including BlackRock and VanEck, providing end-to-end infrastructure that facilitates the entire investment process, from initial fundraising and primary issuance to fund administration and secondary trading.

The platform addresses traditional inefficiencies in fund administration through digital investor onboarding, workflow automation via smart contracts, and support for on-demand issuance and redemption of tokenised securities, offering flexibility in fund management and access to liquidity in secondary markets.



Ondo – Constitutes a pioneering cross-chain DeFi platform in the tokenisation of institutional financial assets.

Founded in 2022, Ondo operates through a unique ecosystem that connects traditional finance with blockchain technology.

Main products include USDY stablecoin backed by U.S. public securities that offers users a yield of 4.29% per year and OUSG stablecoin focused on institutional investors backed by BlackRock's tokenised BUIDL fund, positioning Ondo as a bridge between DeFi and traditional finance through regulated products that democratise access to financial instruments previously restricted to institutional investors.



Rayls – Represents an innovative blockchain solution specifically developed to empower financial institutions with secure and scalable infrastructure for RWA tokenisation.

It is an EVM blockchain that has private and public parts for RWAs with native compliance, governance controls, and privacy preservation, developed by Parfin.

The platform offers a unique approach by allowing financial institutions to create their own permissioned EVM blockchains called "subnets".

Rayls Subnets employ advanced cryptographic techniques, such as Zero-Knowledge, to ensure complete privacy and compliance for transactions, enabling extensive customisation for financial institutions in their virtual environment for developing smart contracts and products.

The technology allows institutions to securely connect these private subnets to the Rayls Public Chain, a public Ethereum L2 blockchain that requires prior KYC from users, providing access to DeFi protocols and larger liquidity pools.

In addition to subnets, the Rayls Privacy Node connects directly to the Public Chain, allowing individual participants to access these same benefits without the need for integration into a subnet.

Some of the main partners that can be highlighted from this solution are participation in developing solutions for DREX with the Central Bank of Brazil and the first tokenisation of receivables with Núclea.

In fact, the project started its Testnet phase accessible to general users that you can access through this link – <https://www.rayls.com/testnet>

RWA Market Opportunities



The tokenisation of real-world assets is a reality that tends to be increasingly present in our world over the years, as well as one of the best opportunities within the crypto assets market for companies, developers, and investors alike.

There are some paths that should be highlighted to take advantage of this opportunity:

Companies

For traditional companies, tokenisation offers modernisation of operational processes, access to new capital markets, and creation of innovative financial products.

Some examples of business opportunities are:

Modernisation of Receivables Structures: Companies can tokenise receivables, inventory, and other operational assets to create new sources of financing. This approach allows more direct access to capital, reducing dependence on traditional banking intermediaries and potentially lowering financing costs. The tokenisation of commercial receivables, for example, offers immediate liquidity for assets that would traditionally take months to convert to cash.

Creation of New Products and Services: Financial institutions can develop tokenised products that meet specific customer demands. Tokenised real estate funds with reduced minimum tickets, fixed-income products with enhanced liquidity, and customised hedge instruments represent significant opportunities. Automation via smart contracts enables the creation of complex structured products with reduced operational costs.

Back-Office Operations Optimisation: The implementation of blockchain infrastructure can automate compliance processes, document management, and operation settlement. Smart contracts can automatically execute corporate actions, dividend distributions, and other routine operations, reducing operational costs and minimising human errors.



Developers

For developers and entrepreneurs, they can build infrastructure, protocols, and applications that address specific needs of this emerging market with great potential.

Some examples of applications that can be developed alongside protocols are:

End-User Applications: Interfaces that simplify the RWA investment experience for non-technical users have significant potential. Platforms that aggregate different RWA products, offer specific analysis tools, and automate investment strategies can capture considerable market share. Creating specific marketplaces for certain asset classes also offers opportunities.

Compliance and Regulatory Solutions: Tools that automate KYC/AML, regulatory reporting, and real-time compliance are critical for institutional adoption. Developing solutions that integrate multiple regulatory jurisdictions and automate due diligence processes can generate substantial value.

Data and Analytics Infrastructure: Platforms that aggregate, standardise, and analyse data from multiple RWA protocols are essential for informed decision-making. Developing RWA-specific metrics, risk management tools, and portfolio analytics solutions represents a significant opportunity.

Investors

For investors, there are opportunities for portfolio diversification, access to previously restricted asset classes, and potential for attractive yields.

Some investment opportunities are:


Portfolio Diversification: RWAs offer exposure to asset classes with low correlation to traditional markets. Tokenised commercial real estate, on-chain private credit, and digital commodities can serve as a hedge against equity and fixed-income market volatility. The fractionalisation capability allows for more granular diversification with smaller tickets.


Access to Better Yields: Many RWA protocols offer yields superior to equivalent traditional instruments, reflecting both technological innovation and risk premiums for being an early user. Tokenised private credit frequently offers double-digit returns, whilst tokenised Treasury securities can offer yields slightly superior to traditional equivalents due to operational efficiency.

The RWA market is one of the most promising segments within digital assets, and participating in this innovation is fundamental for anyone who wants to be positioned in the future of the financial market, especially after the major regulatory and technological evolution we have been observing over the past five years.



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