Blockchain, Crypto Economy & NFTs

FS 2026

The Problem and Learning Objectives

The central question:

- Global assets: approximately $400–500 trillion (Source: MSCI, World Bank, 2024)
- On-chain tokenized RWA, excluding stablecoins: approximately $15 billion (as of early 2025, Source: rwa.xyz)
- Less than 0.004% tokenized: the gap is a business model problem, not only a technology problem

After this mini-lecture you will be able to:

- Map the 3-layer RWA value chain
- Compare 4 startup archetypes by moat strength
- Identify which incumbents face disruption and how they respond
- Evaluate an RWA business model using the fork-resistance framework

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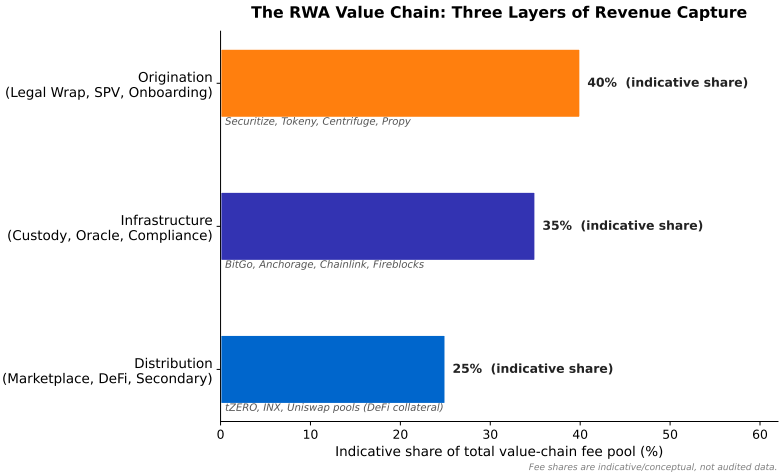
This mini-lecture compresses the full 45-minute lecture. See the full version for sector deep-dives, the Maple Finance case study exercise, and the regulatory licence appendix.

The RWA Value Chain: Three Layers of Revenue



Origination: high margin, one-time. Infrastructure: recurring, SaaS-like. Distribution: thin margin. Key players: Securitize (origination), BitGo/Anchorage (infrastructure), tZERO (distribution).

Sector Snapshot: Where Business Innovation Is Happening

Real Estate:

- Market: approximately $326 trillion (Source: MSCI, 2023); less than 0.01% tokenized
- RealT: fractional US residential from $50; one LLC per property is the moat, not the token
- Constraint: legal title transfer is jurisdictional; technology is solved, law is not

Private Credit:

- Market: approximately $1.7 trillion AUM (Source: Preqin, 2024)
- Centrifuge: over $400 million in pool financing (as of early 2025, Source: Centrifuge documentation)
- Moat: originator relationships, not protocol code (code is open-source and has been forked)

Government Bonds (highest readiness):

- BlackRock BUIDL: $2.9B AUM (as of early 2025, Source: rwa.xyz, Securitize)
- Franklin BENJI: first US-registered blockchain-recorded mutual fund (Source: Franklin Templeton)
- Dominated by incumbents; small margin opportunity for startups

Trade Finance and Carbon (early stage):

- Trade finance: $18 trillion annual flows (Source: WTO, 2023); coordination failure is the main barrier (Contour failure, 2023)
- Carbon: KlimaDAO accumulated reserves without retiring credits (2021–2022), distorting voluntary market prices; tokenization can amplify distortions

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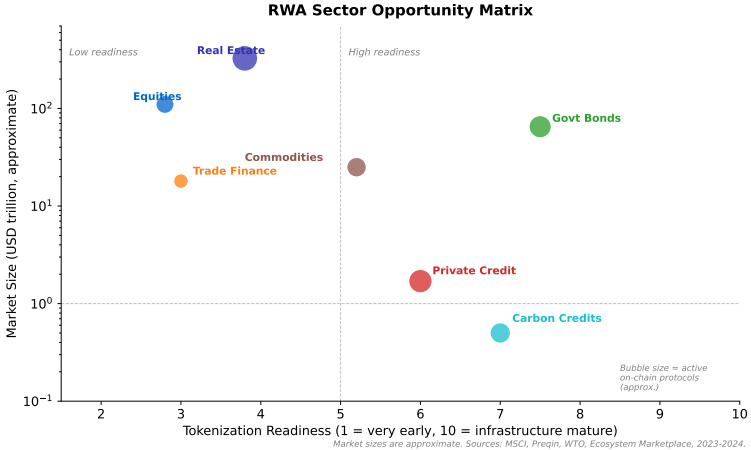
Sector selection matters: private credit and real estate have proven product-market fit. Government bonds are growing but dominated by incumbents. Trade finance and carbon have structural barriers not yet solved by token mechanics alone.

Sector Opportunity Matrix



Government bonds: highest readiness, thin margins. Real estate: largest market, hardest legally. Private credit: best balance of opportunity and traction. (Source: author analysis, rwa.xyz, MSCI, Preqin, 2025)

Who Loses and How Incumbents Fight Back

Disruption severity:

- **Transfer agents** (highest risk): smart contracts replace share registries; Computershare and Broadridge face existential medium-term threat
- **Fund administrators** (high risk): on-chain NAV automation and automated distribution; Franklin BENJI is the proof of concept
- **Prime brokers** (medium risk): losing settlement and custody edge; regulatory relationships and credit extension survive
- **Custodians** (adapting): BNY Mellon, State Street Digital, Northern Trust all launched digital asset custody (as of 2022–2023)

The co-option strategy (dominant incumbent response):

- **JPMorgan Kinexys** (rebranded from Onyx, October 2024): over $1 billion per day in tokenized intraday repo (Source: JPMorgan, 2024)
- **BlackRock BUIDL**: issued on Ethereum via Securitize (broker-dealer licence); $2.9B AUM makes RWA tokenization institutional-grade
- **Pattern**: incumbents capture infrastructure and custody; startups must win origination or distribution niches incumbents will not serve

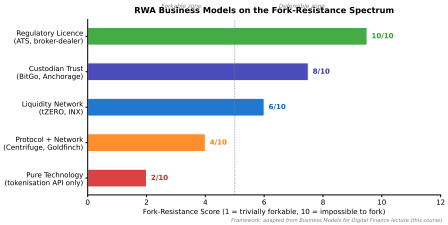
Key insight: the question for startup founders is not "how do we compete with BlackRock?" but "which niches will BlackRock not serve, and why?"

Co-option is rational: incumbents use regulatory licence, balance sheet, and client relationships to occupy the most defensible position in the value chain. Startups must find the gaps.

Four Startup Archetypes and the Fork-Resistance Spectrum

Four archetypes:

- **Tokenisation-as-a-Service**: issues tokens for third-party asset owners; earns per issuance (*Securitize, Tokeny*)
- **Origination Platform**: originates credit or acquires assets directly; earns on pool performance (*Centrifuge, Maple Finance, Goldfinch*)
- **Secondary Marketplace**: ATS-licensed venue for secondary token trading; earns per trade (*tZERO, INX*)
- **Compliance Layer**: KYC/AML and on-chain identity infrastructure; earns recurring SaaS fees (*Chainalysis, Fireblocks*)



The fork-resistance spectrum from the Business Models lecture applies directly to RWA. In RWA, the moat is almost always regulatory or relational, never purely technical. An ATS licence cannot be forked; a tokenisation API can be replicated in weeks.

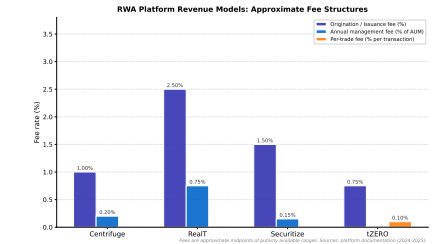
Business Model Canvas: Centrifuge vs. RealT

Centrifuge (Origination Platform):

- Value: on-chain private credit access for retail and institutional investors
- Revenue: origination fee at pool launch plus ongoing admin fee (pool-specific rates)
- Moat: originator relationship network; code is open-source and forkable

RealT (Tokenisation-as-a-Service for real estate):

- Value: fractional US residential property from $50; daily stablecoin rental income
- Revenue: issuance fee (one-time) plus property management fee (annual)
- Moat: one LLC per property and local compliance network (smart contract is forkable)



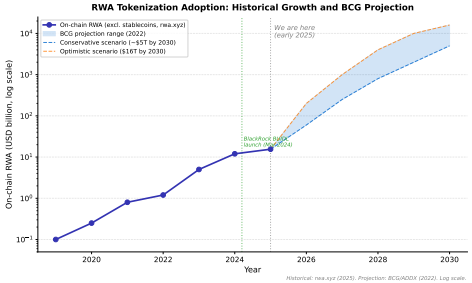
Common lesson:
The real business asset is not the token: it is the legal wrapper, originator relationships, or compliance network.

Fee structures are approximate midpoints of publicly disclosed ranges. (Source: Centrifuge and RealT platform documentation, 2024-2025)

Failure Modes and the Adoption Curve

Key failure modes:

- **Oracle/custodian fraud**: token value depends on off-chain asset verification; no trustless solution exists yet (analogous to Wirecard phantom cash, EUR 1.9 billion, 2020)
- **Regulatory reclassification**: 2018–2019 STO boom collapsed under SEC enforcement; risk remains for projects in grey zones
- **Credit cycle**: Goldfinch defaults (2023), Centrifuge New Silver delays (2023): on-chain transparency makes defaults more visible, not less likely
- **Market distortion**: KlimaDAO carbon reserves accumulated without retirement (2021–2022); token mechanics amplified market distortions



Historical RWA failures arise from credit underwriting failures, regulatory misclassification, and custodian trust, not from smart contract bugs. BCG projects $2–16 trillion in tokenized assets by 2030 (Source: BCG/ADDX, 2022). BlackRock BUIDL (March 2024) is the institutional legitimacy signal that marks the transition to early majority adoption.

Key Takeaways

1. **Three-layer value chain**: origination (high margin, one-time), infrastructure (recurring, SaaS-like), distribution (volume-driven). Own one layer deeply.
2. **Regulatory licence is the only fork-resistant moat in RWA.** An ATS registration or broker-dealer licence cannot be copied by deploying the same smart contract. The most durable RWA businesses are either licensed or partner with a licence holder.
3. **Incumbents co-opt rather than get disrupted.** BlackRock BUIDL ($2.9B, as of early 2025), JPMorgan Kinexys ($1B+/day), and Franklin BENJI show the pattern. Startups must find niches incumbents will not serve.
4. **Private credit and real estate have proven product-market fit** as of 2025. The gap between $400 trillion in global assets and $15 billion on-chain is primarily a legal and business model problem, not a technology problem.

For the full lecture including sector deep-dives, the Maple Finance case study exercise, and the regulatory licence appendix, see the main lecture deck: 20260515_1000_rwa_business_innovation.tex

Quiz: Questions 1–6

Q1. What percentage of global assets (approximately $400–500 trillion) is currently tokenized on-chain as of early 2025?

A) Around 5% B) Around 1% C) Less than 0.01% D) Around 25%

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Q2. Which of the three RWA value-chain layers has the highest margin profile?
A) Distribution (secondary marketplace trading) B) Infrastructure (custody, oracle, compliance) C) Origination (legal wrapping, SPV creation) D) All three layers have identical margins

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Q3. What is the main competitive moat for RealT's real estate tokenization business?
A) Its ERC-20 token contract, which cannot be replicated B) Its one LLC per property and local property management network C) A US ATS licence that competitors cannot obtain D) A proprietary blockchain that competitors cannot fork

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Answer: B – The token contract is trivially forkable. The legal entity per property and local compliance network are the real moat.

Quiz: Questions 4–6

Q4. Which RWA startup archetype requires an ATS (Alternative Trading System) licence to operate?
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Q5. What strategic response have major TradFi incumbents (BlackRock, JPMorgan, Franklin Templeton) primarily adopted toward RWA tokenization?
A) Lobbying regulators to ban tokenization of securities B) Ignoring the trend as a niche crypto experiment C) Co-opting tokenization by building the infrastructure layer themselves D) Acquiring all major tokenization startups to eliminate competition

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Q6. What was the primary business failure that caused KlimaDAO to distort the voluntary carbon market in 2021–2022?
A) A smart contract bug that created duplicate tokens B) Accumulating carbon credit reserves without retiring them, locking credits out of circulation C) Misrepresenting the certification standard of bridged credits D) Operating without regulatory approval in the EU

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Answer: B – KlimaDAO accumulated large carbon reserves as a reserve currency without retiring the credits, inflating stated impact and removing supply from the voluntary market, distorting prices.