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The Liability Gap

Assumptions of the Regulated Liaibility Network Project

Despite the title, the Regulated Liability Network (RLN) proof of concept completed in 2023 begins with the assumption that today's digital-ledger technology can record assets on a blockchain, but not the liabilities that belong with them. The successor project, the Regulated Settlement Network (RSN), completed in December 2024, inherits the same constraint. RLN sought to show that DLT could coordinate inter-bank payments and settlements over a shared ledger; RSN, by contrast, does not attempt to replace FMIs and instead demonstrates only that DLT can orchestrate multi-asset workflows while final settlement and liability records remain off-chain. In both projects, liabilities stay outside the ledger, so legal settlement finality must occur off-chain. Each is therefore an orchestrated workaround for the absence of a liability record to balance the asset record on the blockchain's ledger.

I. Introduction

> "The PoC simulated a regulated network… using a private, permissioned, shared ledger."[1]
>
> "Each participant… would maintain an individual ledger… recording its deposit liabilities; partitions would be updated based on the RLN ledger."[2]
>
> "The use of tokens… should not alter the legal treatment of the deposits."

These statements define the architectural boundary: RLN does not move liabilities onto the shared ledger; it mirrors them. The on-chain representation is a small piece of programmed logic — a smart-contract — that travels with the asset only to reproduce the off-chain accounting steps required for real-time gross settlement. Once the transaction completes, the result is handed back to the off-chain system of record for legal settlement.

RSN inherits the same boundary. Although RSN introduces tokenized securities and tokenized deposits on a shared ledger, each Member still maintains its own partition, and legal settlement finality continues to occur off-chain under existing commercial law. Because liabilities on-chain are only representations of book-entry obligations, both RLN and RSN introduced a shared-messaging layer to synchronize blockchain record changes with the individual ledgers maintained by each bank.

Here is how the RLN technical findings report describes the shares messaging layer:

> "The RLN construct enables the synchronization of distinct participant ledgers."
>
> "Settlement finality is a legal concept rather than a technical construct."
>
> "Once settlement finality occurs… a hash of the transaction is recorded… before it is persisted in each participant's ledger."

At the center of the design is a simple mechanism: the shared ledger records that a transaction has occurred, and each bank then updates its own liability ledger to match it. The shared ledger is not the accounting system; it only signals state change. The authoritative debits and credits still occur off-chain, inside the GAAP-compliant systems where the actual liabilities live.

This construct closely resembles the "triple-entry accounting" experiments of Ian Grigg and others in the mid-2010s, which linked two independent double-entry systems to a shared, immutable blockchain record. The ambition echoed Yuji Ijiri's earlier theoretical work, but the practical outcome was the same: the model could not be reconciled with

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GAAP. In practice, the blockchain functioned only as a notarized receipt, not an accounting system, and proved unworkable for real-world financial reporting.

II. The Legal Perimeter: UCC 4A

Here is what the RLN Legal Report states that reinforces this:

> "The transaction would remain settled with finality even if any of the participants' partitions are not updated…"

Simply put, the shared ledger is **not** the system of record. Finality does not depend on the DLT. Finality depends on the off-chain accounting systems. The legal perimeter is defined by the fact that settlement finality is achieved under existing commercial law.

> "Payments made using the RLN should be governed by Article 4-A of the UCC and should be final…"
>
> "Ownership of the tokens and the related deposits will be reflected on the ledgers maintained by the relevant participating bank."

This means DLT does not extinguish obligations, does not create, or modify liabilities, does not serve as the legal system of record, and does not provide legal finality. Finality occurs because UCC 4A says it does, not because the ledger is authoritative. This is the legal perimeter RLN cannot cross — RSN inherits these same boundary conditions with respect to liabilities: although RSN introduces tokenized securities and tokenized deposits on a shared ledger, each Member still maintains its own partition, and legal settlement finality continues to occur off-chain under existing commercial law.

III. The Business Constraint: No On-Chain Credit, No On-Chain Netting

Because liabilities remain off-chain, RLN cannot support functional credit, netting, or manage insolvency risk with the data available on-chain.

The Legal Report makes this explicit:

> "It may be possible… to extend credit… but this was not within the scope of the PoC."

The Business Report reinforces the constraint:

> "Settlement mechanism: Real-time gross settlement."
>
> "Net settlement… liquidity savings mechanisms: out of scope."

This is not an oversight. The the lack of credit and netting in these projects was intensional. The structural consequences of the architecture in reality would likely produce a liquidity drought:

- If liabilities are off-chain, credit must be off-chain.
- If credit is off-chain, netting must be off-chain.
- If netting is off-chain, insolvancy risk controls remain off-chain.
- If insolvancy risk controls are off-chain, the ledger cannot be a settlement system.

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RLN is therefore limited to prefunded RTGS, because that is all an asset-native ledger can support. RSN, despite introducing tokenized securities and tokenized deposits on a shared ledger, inherits the same limitation: Members retain their own partitions, liabilities remain off-chain, and the RSN PoC did not support on-chain credit or netting.

IV. Structural Consequences

> "The RLN (DLT) ledger would record only the completion of the transaction…"
>
> "Participants ultimately control their own partitions."
>
> "Shared ledger technology… orchestrates customer payments and final settlements."

Across the legal, technical, and business RLN findings reports, the same structural point is clear: the RLN DLT only simulated settlement; it did not perform final settlement. The RSN technical and legal findings reports also confirm the same boundary: although RSN records tokenized assets on a shared ledger, legal settlement finality continues to occur off-chain, and Members' own books and records remain authoritative. The DLT mirrors liabilities; it does not hold them. It coordinates accounting; it does not replace accounting. The shared ledger is a record of completed activity, not a ledger of obligations. The authoritative books remain the GAAP-compliant systems maintained by each institution. The tokens remain non-securities, whose utility is contained to a notarized reciept.

IV. The Workaround Remedy

The limitations of RLN and RSN point to a simple conclusion: the industry has been compensating for the absence of liabilities in th DLT record by building wrappers, alternative token formats, and smart-contract abstractions. These are workarounds, not solutions. They preserve the existing accounting perimeter because the DLT cannot carry the liabilities that define settlement, and any project attempting to qualify tokens as securities is forced into the same pattern for structural reasons.

The remedy is not another wrapper. The remedy is a ledger that can record liabilities natively — a DLT that can express obligations. Such a ledger must represent future-dated payables, receivables, exposures, encumbrances, and lifecycle events as first-class accounting objects; support credit, netting, compression, and legal settlement finality; and deliver debits and credits into a digital, GAAP-compliant double-entry ledger from the protocol layer.

This requires replacing today's DLT with a networked accounting subledger dedicated to tokenized assets and built on blockchain technology. It is private, discards consensus, settles atomically, and writes blocks in double-entry accounting. Accounting becomes the interface to existing systems — risk and netting engines, account-management systems, broker platforms, and venues where credit functions normally and produces the deep liquidity U.S. markets are known for.

This is the architectural shift RLN would have needed to execute settlement finality on-chain rather than simulate it. It is the shift RSN would require to support tokenized assets as securities rather than simulations of securities. Such a change would allow real-time markets to operate with the solvency, liquidity, and lifecycle integrity of traditional markets, bringing both asset and liability legs on-chain and inside the legal and accounting perimeter of U.S. securities law.

The direction is straightforward: return to the architectural principles that make blockchains viable as accounting systems rather than simulations of accounting systems. Extend today's interbank functions and markets into a tokenized environment through the existing accounting layers and into a real-time settlement domain. A networked accounting subledger that executes atomic settlement with finality and synchronizes all authorized systems on its network should incorporate only the elements of blockchain technology that are structurally necessary and avoid yielding control to protocols never designed to run U.S. securities markets.

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If the objective is T+0 atomic settlement and a tokenized market that fits within U.S. securities law, this architecture provides the logical path.

Conclusion

Any blockchain related project with the ambition of replacing modern financial markets infrastructure deserves to have every requirement questioned, even if it means questioning all first principles. RLN and RSN did not challenge the first principles Satoshi Nakamoto implemented when he appropriated blockchain technology to introduce the Bitcoin protocol. Blockchains have existed since 1991, introduced by Stuart Haber and Scott Stornetta. In 2008, Satoshi's Bitcoin was designed to introduce an entirely new monetary system — one designed to eliminate intermediaries, which he viewed as the source of all problems in modern financial markets. His most fundamental principle was to eliminate the recording of liabilities on the ledger — changing the nature of a claim and, more importantly, the nature of an obligation. This forced gross settlement between parties. Counterparties must be fully prefunded before they can transact. No obligation going into the transaction, none coming out. If the transaction does not meet these qualifications, it does not occur. Once final, it cannot be reversed.

This is the antithesis of today's regulated markets, where credit lives and liquidity is deep. And here is the remarkable part: the asset-only ledger has never been redesigned since its inception. The only "revolution" in this domain is Ethereum — but with Ethereum, accounting must be reproduced on a thin computer layer called an L2, or an Ethereum Virtual Machine, where "smart contracts" contain data and code-bytes. Every proposal to tokenize securities that the SEC is considering depends on smart contracts and EVMs to solve the accounting problem.

Tokenized assets are being introduced into U.S. markets without the ledger architecture required to support them as securities. RLN and RSN are not alone. The industry has built simialr workarounds that keep the real accounting off-chain while presenting an on-chain representation as if it were the claim – the approach has many limitations. Aside from being a very inefficient architecture, it is a vulnerable attack surface. Look no further than April of 2026 when billion-dollar losses due to crypto platform hacks put tokenization advocates on notice.

The root cause is architectural. Blockchains cannot express obligations natively. Without liabilities, there are no claims. Without claims, there are no securities. The industry is not building a new market structure. It is building a simulation of one and presenting it as if it were a securities platform.

A different foundation is required. A networked accounting subledger that can express obligations natively — a GAAP-grade accounting substrate at the protocol layer designed for tokenized markets. It would restore the missing half of the ledger, reduce the attach surface and produce an execution model that fits neatly into existing IT security controls. It brings the liability record on-chain, where it can participate in netting, compression, lifecycle events, and real-time settlement without leaving the legal and accounting perimeter of securities law.

With that foundation in place, tokenized assets can operate with the same solvency, enforceability, and lifecycle integrity that define U.S. markets today. The architecture becomes an extension of the existing system rather than a controlled departure from it, and the tokenized environment inherits the stability and legal clarity of the markets it connects to.

End Notes:

1. RLN data can be found here: https://www.rlnuspoc.org/
2. RSN data can be found here: https://www.sifma.org/research/white-papers/regulated-settlement-network-proof-of-concept

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