

Programmable Structured Credit

A WHITE PAPER BY HYPERGLADE

Implementing Blockchain for Trade Finance

Introduction

Most structured credit operates in the dark. Investors receive quarterly snapshots of aggregated performance- average duration, blended yield, headline default rates- with little visibility into what's actually happening inside the portfolio. When a loan underperforms, you learn about it months later. When concentration risk builds, you rely on fund managers to notice and act. The system runs on trust and lag.

Programmable Structured Credit (PSC) inverts this model. Each asset carries granular, loan-level data embedded directly into its structure. Rules-based limits such as sector caps, counterparty thresholds, liquidity gates, execute automatically, not at the discretion of a quarterly review committee. Thus, we believe this paradigm isn't incremental improvement, but rather a fundamental re-architecture of how credit is packaged, monitored, and traded.

The implications extend beyond transparency. When you can observe payment velocity in real time, you can reprice risk dynamically rather than waiting for defaults to materialize. When you can slice portfolios by multiple dimensions simultaneously - e.g. tenor, geography, payor quality - you **unlock composable risk layers tailored to specific investor mandates**. When you can tokenize these structures, you create liquid secondary markets where none existed before.

This paper explores the construction primitives that make PSC possible, the optimization logic that minimizes economic deadweight, and the value unlocks for both traditional private credit funds and crypto-native institutions.

Construction Primitives

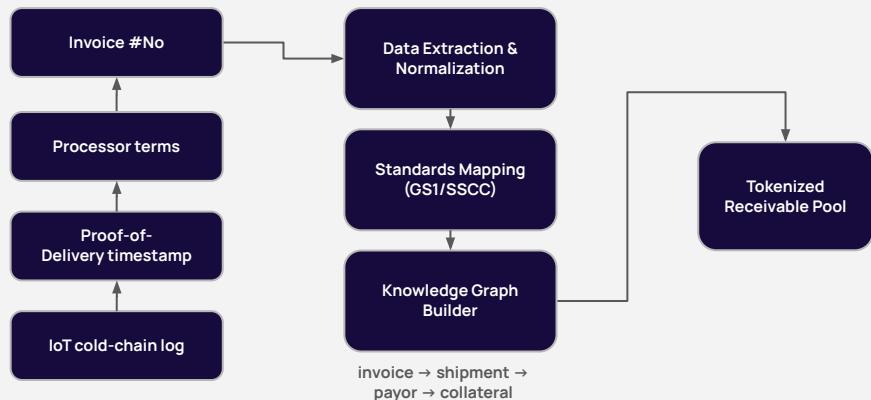
Traditional structured credit operates like a black box - investors receive periodic reports on aggregated performance, with limited visibility into what's actually happening inside the portfolio.

Programmable Structured Credit (PSC) inverts this model. Each asset carries **granular, loan-level data**: borrower identity, payment terms, collateral specifics, and real-time state changes. This isn't just transparency for transparency's sake - it enables automated governance. Rules-based limits (sector concentration caps, counterparty thresholds, liquidity gates) are embedded directly into the structure and enforced programmatically, eliminating the lag and discretion inherent in manual oversight.

Key Primitives:

- Loan-level observability - Not pooled opacity; every asset visible with full provenance
- Embedded rule enforcement - Concentration limits, liquidity triggers execute automatically
- Composable risk layers - Mix tenor, credit, geography per investor mandate
- Real-time performance feeds - Payment behavior updates risk models continuously
- Interoperable tokenization - Tradable, standardized units enabling secondary liquidity

Programmable structured credit **embeds loan-level data and rule-based logic** into a single tokenized asset.



Data As Collateral

This enables risk dimensions to become composable: investors can stack duration, credit quality, geography, and FX exposure like Lego blocks, tailoring exposure to their exact appetite. Continuous monitoring feeds live performance signals - payment velocity, utilization rates, early warnings - into adaptive models that reprice risk in real time rather than waiting for quarterly reviews. Standardized tokenization wraps it all together, making these credits interoperable and liquid across platforms.

Stratification & Optimization

Deploying Capital Where It Matters Most: Granular data reveals where credit drives trade versus where it sits idle. High-conversion borrowers with fast inventory turns and efficient drawdowns get senior exposure, while speculative or slow-velocity segments price into junior tranches. Capital flows to productive deployment rather than guesswork, targeting real economic gaps and minimizing deadweight loss across the portfolio.

Segmentation Logic

The data insights we had earlier lend insight into how you can segment and structure. There are three primary ways we can think about this:



Propensity: "Ability to deploy capital"

- Consistent history of efficient credit use
- Fast drawdown-to-inventory-turn cycles; minimal idle balances



Granular Credit: "Ability to Create Micro-Tranches"

- Slice portfolios by multiple dimensions simultaneously (tenor + sector + geography + payor quality)



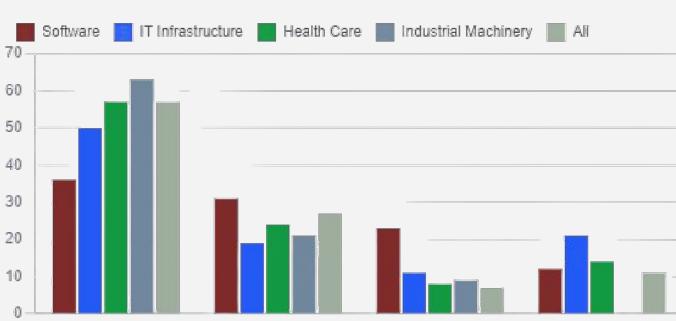
Frictionless Syndication: "Ability to Scale via Composable Participation"

- Tokenized units enable multi-investor co-funding without complex legal waterfalls

Result: Economic Deadweight Minimization

Traditional finance locks capital into low-velocity accounts while high-conversion borrowers wait. PSC redirects liquidity in real-time toward productive deployment - whether asset-heavy manufacturers or asset-light distributors. The shift: from static allocation based on collateral to dynamic routing based on operational signals.

Figure 1: Credit Tranching is Non-Uniform in Most Sectors



Source: [IMF report](#)

Unlocking Value

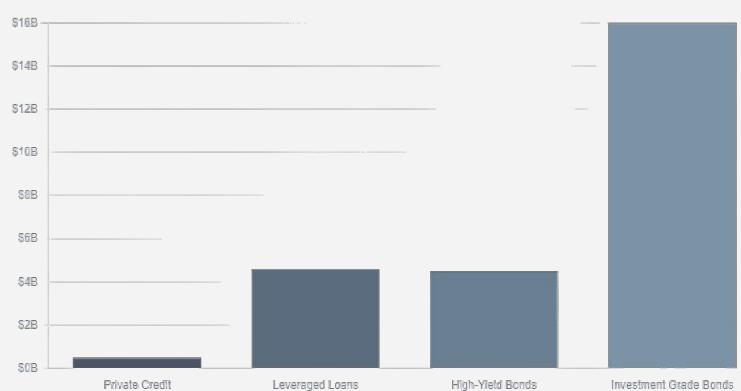
PSC's construction primitives and optimization logic unlock distinct advantages for different capital sources. Traditional private credit funds gain new distribution channels and slash operational friction, thus repackaging existing short-duration books into transparent, on-chain instruments without overhauling the underwriting process. Crypto-native institutions access genuinely decorrelated yield streams with loan-level visibility, escaping the correlation trap of DeFi protocols and derivatives strategies while deploying stablecoin treasuries into real economic activity.

Potent Opportunity

Private credit remains structurally underpenetrated - the median borrower in this market is a fraction of the size seen in public credit markets, yet the asset class delivers materially lower loss rates. This stems from proactive engagement and senior secured positioning, but traditional private credit still operates on lagged financials and periodic reviews.

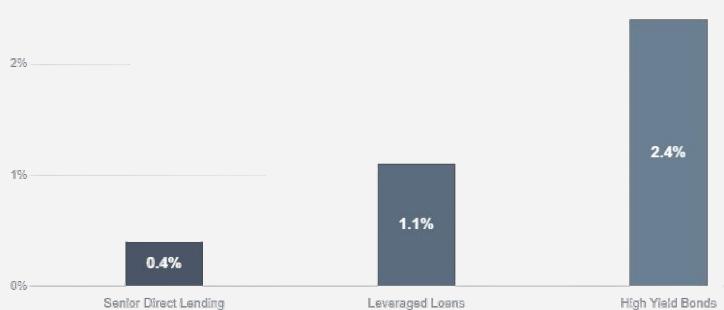
PSC applies this same control logic to short-duration trade receivables, where real-time monitoring and granular operational data transform loss prevention from reactive to anticipatory.

Figure 2: Median Borrower Size by Credit Market



Source: [IMF report](#)

Figure 3: 8 Year Annual Loss Rate



Source: [Morgan Stanley](#)

Conclusion

Our thesis is that Programmable Structured Credit transforms opaque receivables into transparent, liquid instruments. By embedding loan-level data and rules-based governance, PSC enables precision capital allocation minimizing deadweight loss while unlocking new distribution for traditional funds and decorrelated yield for crypto institutions.