

# The Sereel Protocol: Institutional DeFi for Emerging Markets

Lance Davis\*  
Sereel Technologies

Fredrick Waihenya†  
Sereel Technologies

July 18, 2025

## Abstract

Traditional capital markets in emerging economies face significant limitations: fragmented liquidity, high settlement costs, limited hedging instruments, and barriers to cross-border capital flows. The Sereel Protocol addresses these challenges by creating multi-purpose vaults that simultaneously generate yield from automated market making, collateralized lending, and options trading. Through intelligent rehypothecation and ERC-3643 compliance frameworks, institutional participants can access sophisticated financial instruments while maintaining regulatory compliance in local jurisdictions.

## 1 Introduction

Capital markets have evolved over centuries from primitive merchant funding arrangements to sophisticated electronic trading platforms. The African continent presents unique challenges and opportunities in this evolution, with its diverse regulatory environments and rapidly growing economies.

The Sereel Protocol introduces Institutional Decentralized Finance (InDeFi), addressing the specific needs of African institutions through:

- **Local Currency Integration:** All Sereel vaults operate with local currency stablecoins paired with locally-relevant tokenized assets
- **Regulatory Compliance:** ERC-3643 compliance framework ensures all tokenized assets meet local regulatory requirements
- **Multi-Purpose DeFi Vaults:** Assets simultaneously serve multiple functions across automated market making, lending, and options writing

The mathematical framework for this liquidity multiplication can be expressed as:

$$\text{Effective Liquidity} = \text{Base Assets} \times \left( 1 + \frac{\text{AMM Allocation}}{\text{AMM Collateral Ratio}} + \frac{\text{Lending Allocation}}{\text{Lending Collateral Ratio}} \right)$$

---

\*lance@sereel.com

†bunny@sereel.com

**Example 1. *Liquidity Multiplication in Practice:*** Consider a \$1M vault deployed in Rwanda with the following parameters:

- *Base Assets:* \$1,000,000 in tokenized Bank of Kigali (BK) equity
- *AMM Allocation:* 40% (\$400,000)
- *Lending Allocation:* 40% (\$400,000)
- *Options Allocation:* 20% (\$200,000)
- *AMM Collateral Ratio:* 75%
- *Lending Collateral Ratio:* 150%

*Applying our formula:*

$$\text{Effective Liquidity} = \$1M \times \left(1 + \frac{0.4}{0.75} + \frac{0.4}{1.5}\right) = \$1M \times 1.8 = \$1.8M$$

*This represents an 80% increase in effective capital utilization without requiring additional investment.*

## 1.1 Market Impact in Emerging Economies

The implications for capital-constrained markets like Rwanda are profound:

1. **Increased Market Depth:** The Rwanda Stock Exchange (RSE) has an average daily trading volume of approximately \$250,000. A single \$1M Sereel vault effectively adds \$1.8M in liquidity, potentially increasing market depth by over 700%.
2. **Reduced Transaction Costs:** Traditional equity transactions in East African markets incur 2-3% in fees. Sereel's AMM reduces this to 0.3%, representing a 90% cost reduction.
3. **Access to Derivatives:** While options markets are virtually non-existent in most African exchanges, Sereel's integrated options module creates synthetic derivatives exposure for hedging and yield enhancement.
4. **Improved Capital Efficiency:** Traditional financial institutions in emerging markets maintain high capital reserves due to liquidity constraints. Sereel's rehypothecation model allows the same capital to work efficiently across multiple financial functions.
5. **Cross-Border Capital Flows:** With local currency stablecoin integration, Sereel enables efficient cross-border investment while mitigating currency risk, addressing a key barrier to international investment in African markets.

For institutions like pension funds and asset managers in Rwanda, this transforms a \$1M allocation from a simple investment into a comprehensive market-making, lending, and derivatives operation—capabilities previously available only to the largest global financial institutions.

## **2 Protocol Architecture**

### **2.1 Core Components**

The Sereel Protocol consists of four primary components:

#### **2.1.1 Asset Tokenization Layer**

Built on ERC-3643 standard, ensuring compliance with local securities regulations while maintaining interoperability across jurisdictions.

#### **2.1.2 Unified Liquidity Vaults**

Smart contracts that automatically allocate capital across multiple yield-generating strategies.

#### **2.1.3 Cross-Chain Settlement Network**

Utilizing optimistic rollups and state channels for near-instant settlement with finality guarantees.

#### **2.1.4 Regulatory Compliance Framework**

Automated compliance monitoring and reporting tools that interface with local regulatory systems.

## **3 Economic Model**

### **3.1 Yield Generation Mechanisms**

The protocol generates yield through three primary mechanisms:

- Automated Market Making: 0.3% fees on all trades, distributed proportionally to liquidity providers
- Collateralized Lending: Variable interest rates based on utilization, typically 8-15% APR
- Options Writing: Premium collection from covered call and cash-secured put strategies

### **3.2 Risk Management**

Risk is managed through dynamic collateral ratios that adjust based on asset volatility, diversified exposure across multiple asset classes and geographies, and automated liquidation mechanisms to protect vault solvency.

## **4 Implementation Roadmap**

### **4.1 Phase 1: South African Pilot**

Launch with JSE-listed equity tokens, integration with major South African banks, and regulatory approval from FSCA.

### **4.2 Phase 2: Regional Expansion**

Expansion to Kenya, Nigeria, and Ghana with cross-border settlement capabilities and multi-currency stablecoin support.

### **4.3 Phase 3: Continental Scale**

Integration with all major African exchanges, derivatives and structured products, and institutional custody solutions.

## **5 Conclusion**

The Sereel Protocol represents a paradigm shift in how African capital markets can leverage blockchain technology to overcome traditional limitations. By creating unified liquidity pools that simultaneously serve multiple functions, we unlock unprecedented yield opportunities while maintaining regulatory compliance and reducing systemic risk.