Scape Litepaper

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Abstract

Scape is a receipt-backed, sector-based prediction market that bridges real world industrial materials with 24/7 on-chain liquidity. Instead of relying on synthetic price feeds or opaque commodity data, Scape uses warehouse receipts to create physically backed indices representing major geopolitical or industrial sectors such as rare earths, semiconductors, battery metals, petrochemicals, and aerospace materials. These sector tokens act as fully collateralized ETF-like instruments and enable traders to speculate on geopolitical narratives in real time. Authorized Participants (APs) deliver materials into certified warehouses, Scape's NAV engine values them, Market Makers (MMs) provide liquidity, and traders express directional views tied to global supply-chain events.

1 Introduction

Industrial and geopolitical narratives increasingly dominate global markets, yet remain impossible to directly trade. Social media, news cycles, prediction markets, and macro speculation regularly focus on rare earth conflicts, semiconductor wars, tungsten export controls, cobalt ethics, EV metals cycles, and petrochemical volatility. However, there is no liquid, permissionless, 24/7 marketplace for these themes.

Traditional commodities infrastructure is slow, opaque, and dominated by large firms with decades-old systems. Crypto markets are fast but lack grounding in physical truth. Scape unifies these worlds by turning real warehouse receipts into liquid, on-chain sector tokens.

1.1 Purpose and Scope

This litepaper explains Scape's architecture, market mechanics, token model, and role as a geopolitical "truth market." It is intended for Authorized Participants (APs), warehouses, market makers, and institutional partners.

1.2 Key Objectives

Scape aims to:

- Create the world's first **physical receipt-backed industrial sector markets**.
- Build a **geopolitical prediction layer** tied to real supply-chain assets.
- Offer **liquid, on-chain instruments** representing complex global narratives.

2 Problem

2.1 Current Challenges

Scape addresses a set of structural gaps in existing markets:

- No liquid markets exist for industrial geopolitical themes (e.g., rare earth tensions).
- Price-feed indices are synthetic, manipulable, and expensive to license.
- Commodity markets operate on slow, permissioned rails not suitable for Web3.
- Traders cannot easily express directional exposure to global supply-chain shocks.
- Traditional markets lack 24/7 liquidity, programmability, and composability.
- APs cannot liquidate receipts quickly or efficiently.

2.2 Market Analysis

Key macro and structural observations include:

- China controls roughly 60–98% of many critical materials.
- Global EV, AI, defense, semiconductor, and aerospace sectors are booming.
- Commodity ETFs and thematic funds hold more than $700B AUM but trade on legacy rails.
- Growth in prediction markets demonstrates a strong appetite for **narrative trading**.

2.3 Stakeholder Impact

Scape impacts multiple stakeholder groups:

- **Traders**: Gain access to new market primitives and sector-level narratives.
- **APs**: Unlock a faster, more liquid buyer for materials.
- **MMs**: Gain new structured products to quote, loop, and arbitrage.
- **Warehouses**: Gain additional flow, storage demand, and fee revenue.
- **Institutions**: Gain a more grounded, transparent alternative to synthetic price feeds.

3 Proposed Solution: The Scape Protocol

3.1 Overview of Scape Protocol

Scape transforms warehouse receipts—globally standardized documents of title for industrial materials—into fully backed index tokens representing entire industrial and geopolitical sectors. These tokens trade on Scape's AMM and on Hyperliquid spot and perpetual futures markets via HIP-3, enabling 24/7 price discovery for global narratives that previously lacked liquid markets.

3.2 Key Features and Capabilities

Core features include:

- **Receipt-Backed Indices**: 1:1 collateralization using warehouse receipts.
- **Geopolitical Prediction Layer**: Markets track real-world sector tension cycles.
- **On-Chain Liquidity**: AMM and perps create continuous price discovery.
- **AP Integration**: APs deliver materials and are paid in fiat.
- **NAV Engine**: Regular, grounded valuations based on real-world supply chains.
- **Market Maker Infrastructure**: Deep liquidity, arbitrage, and cross-venue quoting.

3.3 Technical Architecture

At a high level, the technical architecture consists of:

- **Scape SPV**: Holds receipts across approved warehouses.
- **Receipt Registry**: Verifies, authenticates, and stores receipt metadata.
- **NAV Engine**: Computes fair value based on composite pricing models and sector data.
- **Minter Contract**: Issues tokens only after verified receipts are delivered into the SPV.
- **AMM**: Hosts deep liquidity for spot trading of index tokens.
- **Perp Integration**: Hyperliquid perps enable leveraged directional exposure.
- **MM Control Layer**: Coordinates inventory, pricing, and arbitrage bands across venues.

3.4 Innovation and Differentiation

Scape is differentiated by:

- Being the first provider of physically backed industrial sector indices.
- Serving as a prediction market tied to **real materials** rather than abstract binary outcomes.
- Eliminating reliance on licensed price feeds and opaque index construction.
- Bridging industrial supply-chain data with crypto-native liquidity infrastructure.
- Reflecting **physical truth** instead of purely synthetic abstractions.

4 Methodology

4.1 Research Approach

The design of Scape is informed by:

- Analysis of ETF creation/redemption flows and AP/MM incentives.
- Mapping of global material supply chains and warehouse networks.
- Interviews with APs, warehouses, and commodity traders.
- Simulation of NAV updates and market-maker arbitrage flows.
- Review of geopolitical risk indicators and sector correlations.

4.2 Implementation Framework

Deployment of Scape is organized into phases:

- **Phase 1**: Warehouse onboarding, AP onboarding, and SPV setup.
- **Phase 2**: Receipt Registry, NAV Engine, and mint architecture deployment.
- **Phase 3**: MM liquidity seeding, AMM deployment, and Hyperliquid integration.
- **Phase 4**: Index launches (e.g., EVX, REMX, SMX).
- **Phase 5**: Fixed-price agreements (FPAs) and institutional scaling.

4.3 Validation and Testing

Validation and risk controls include:

- Receipt audit checks and verification procedures.
- Backtesting NAV calculation models.
- Market maker simulations on AMM and perps.
- Controlled mint/burn scenarios with bounded inventory.
- Stress testing under volatility and liquidity shocks.

5 Use Cases and Applications

5.1 Primary Use Case: Geopolitical Sector Speculation

A trader who expects rising US–China rare earth tensions can:

- Buy **REMX** index tokens or go long REMX perps.
- Express a directional view that increases in value as rare earth materials appreciate and markets price in conflict risk.

5.2 Additional Applications

Additional use cases include:

- Industrial hedging for manufacturers and end users of critical materials.
- Thematic macro trading across EV, AI, defense, and aerospace sectors.
- Portfolio diversification into non-traditional real asset exposures.
- Supply-chain speculation around sanctions, export controls, and demand surges.
- Market making and DEX liquidity provision for sector indices.
- 24/7 retail access to industrial sectors via composable on-chain instruments.

5.3 Illustrative Case Studies

Hypothetical scenarios include:

- China announces tungsten export restrictions; REMX rallies 40% on Scape as markets reprice supply risk.
- EV battery demand surges; EVX rises with tightening cobalt and nickel markets.
- Semiconductor blockade fears push SMX into a sustained bull run.

6 Expected Results and Impact

6.1 Expected Outcomes and Long-Term Value

Scape unlocks a new market for **geopolitical sector prediction**, where price signals reflect real supply-chain stress, industrial demand, and global narrative shifts rather than purely synthetic derivatives.

By driving increased **warehouse utilization** and higher **AP throughput**, Scape ties tokenized flows directly to real-world material movements, transforming opaque commodity channels into transparent, auditable systems. This democratizes access to industrial macro exposure that was previously available only to specialized traders and large institutions.

Over the long term, Scape aims to evolve into the **truth layer** for industrial geopolitics: a continuous, market-driven barometer that prices critical sectors based on actual materials and actual narratives, not abstractions.

7 Timeline

Indicative development milestones:

- **Q1 2026**: Infrastructure and testnet launch.
- **Q2 2026**: Scape AMM and first index launch.
- **Q3 2026**: HIP-3 perps market opens.
- **Q4 2026**: Institutional expansion and second/third index releases.

8 Risks and Mitigation

8.1 Identified Risks

Risk	Impact	Mitigation Strategy
Warehouse fraud	High	Multi-signature verification and use of Tier-1 depots with strong audit trails.
NAV mispricing	Medium	Multi-feed composite pricing model and conservative haircuts.
Regulatory pressure	High	SPV structure, AP abstraction, and jurisdictional diversification.
Market manipulation	Medium	MM integration, arbitrage frameworks, and monitoring for anomalous flows.

Table 1: Key risks and mitigation strategies for Scape.

8.2 Contingency Plans

Planned contingency mechanisms include:

- Secondary warehouse redundancy to avoid single points of failure.
- NAV fallback methodologies in case of feed disruption or model anomalies.
- Treasury buffers for orderly redemptions during stress events.
- Emergency pause for mint/burn operations under receipt disputes or fraud investigations.

9 Competitive Analysis

9.1 Landscape Overview

Scape sits at the intersection of several existing categories:

- **RWA tokenization platforms**: Typically handle credit and financial claims, not industrial materials.
- **Synthetic commodity tokens**: Rely on price feeds and lack physical backing.
- **Prediction markets**: Trade questions and binary outcomes, not real sectors.
- **ETFs**: Not 24/7, not composable, not global, and not permissionless.

9.2 Comparative Advantages

Scape's comparative advantages include:

- Being the only platform offering **receipt-backed sector exposure**.

- Providing the first geopolitical prediction market directly tied to real supply chains.
- Combining AMM and perpetual futures infrastructure for industrial materials.
- AP and MM models that are familiar to ETF market participants, easing onboarding.

10 Conclusion

10.1 Summary

Scape unifies the physical world and the narrative world into a single market. Warehouse receipts anchor truth; AMMs and perps express speculation. The result is a real-time reflection of global industrial and geopolitical tension cycles.

10.2 Actors and Actions

The core actors and their next steps are:

- **APs**: Onboard to Scape for immediate receipt liquidity.
- **MMs**: Request inventory access and quoting bands for spot and perps.
- **Traders**: Enter the first real geopolitical macro markets.
- **Warehouses**: Join Scape's custody network as approved depots.
- **Scape AMM & Hyperliquid Spot/Perps**: List and scale Scape indices as new global industrial sector primitives.