



PredictionSwap Protocol Litepaper

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Abstract

Liquid prediction markets today rely on centralised trade execution to mitigate liquidity fragmentation that is systemic to current on-chain infrastructure. PredictionSwap introduces the Exposure Ledger Machine (ELM), an exposure-first on-chain protocol, enabling fully liquid decentralised trading on-chain for the first time. This unlocks a new universe of prediction market applications that were previously unfeasible.

Introduction

Centralisation

The most liquid prediction markets today use centralised or hybrid architectures, where trade execution is centralised.

This centralisation is the workaround to fragmented liquidity on-chain caused by fundamental issues with the representation of prediction market positions.

Centralised execution exists because on-chain liquidity fragments.

Diagnosis: Why On-Chain Liquidity Fragments

Tokenomic representation as the primitive

The core problem with fully on-chain prediction markets lies in how positions are represented.

Existing systems encode each type of bet as a separate token, with a participant's position recorded as a collection of token balances. These balances constitute the primary on-chain state, while true economic exposure is not recorded directly and must be inferred from them.

This representation introduces two forms of duplication:

- **Transaction Duplication**
- **State Duplication**

Together, these duplications create structural inefficiencies that make pre-funded inventory unavoidable.

Transaction duplication

In a binary market, a trader can increase exposure to a positive outcome in two economically identical ways:

- buying **YES**
- selling **NO**

Both of these actions increase exposure to the same outcome (**YES**).

However, on-chain they are **distinct** transactions that interact with different market sides and require separate liquidity to support.

State duplication

In a multi-outcome market a single economic view can be expressed through multiple token combinations.

Consider a three-outcome market: Red, Green, and Blue, where exactly one outcome will occur.

The following two positions are economically equivalent:

- **NO-Green**
- **YES-Red + YES-Blue**

These positions always settle identically under every possible outcome. Yet they exist as **different token balances in different markets**.

Capital remains locked in whichever representation is held, and moving between representations requires specific on-chain transactions.

Fragmented Liquidity

Transaction Duplication fragments liquidity across economically identical actions.
State Duplication fragments liquidity across economically identical positions.

Because representations are treated as distinct on-chain states, exposure is not netted and capital therefor remains isolated.

Funded Inventory becomes unavoidable

When economically identical exposure is fragmented across distinct on-chain states, there is no mechanism for automatic netting.

Liquidity providers must therefore hold outcome tokens for every position that might be traded. Funded Inventory.

Capital is therefore consumed simply to make prices available, even when true net exposure is small or zero.

Before PredictionSwap, on-chain liquidity requires pre-funded inventory.

Solution: Exposure as the On-Chain Primitive

Exposure-first accounting

PredictionSwap records positions as **exposure** rather than as collections of outcome-specific tokens.

Exposure represents how a participant's payoff changes under each possible outcome. Positions that always produce the same payoff profile are therefore represented as the same on-chain state, regardless of how they are constructed at the market level.

The Exposure Ledger Machine

The Exposure Ledger Machine (ELM) is the shared on-chain system that records, updates, nets, and settles exposure.

Rather than tracking balances independently inside each market, the ELM maintains a single exposure state per participant. Economically equivalent positions map to the same exposure, and offsetting exposure nets automatically.

Solvency and netting

The ELM enforces solvency as a hard constraint after every exposure update. Rather than funding individual positions or representations, the system maintains exposure exactly at the solvency boundary.

Because solvency is enforced *after* exposure is updated, economically equivalent actions collapse into the same state transition. For example, **buying NO** and **selling YES** both produce identical changes in exposure and are therefore processed identically by the Ledger.

Offsetting exposure nets immediately at the ledger level. Positions that reduce risk unwind automatically, without requiring explicit closing transactions or market resolution. Netting therefore occurs continuously during each trade.

PredictionSwap makes exposure the state, so positions net by construction.

Result: Deep Liquidity On-Chain

Liquidity without inventory

Because exposure is the primitive, liquidity no longer requires holding outcome tokens.

Liquidity can be offered on-chain by committing to a change in exposure rather than by provisioning tokens. Capital is committed only when exposure is created, not to sustain liquidity.

Decentralised order books

In this model, an order represents a conditional commitment to exposure, priced in the protocol stablecoin.

Both bids and asks draw from the same collateral pool and are enforced by the ELM. Order books can therefore operate in a decentralised way, requiring neither inventory nor a centralised matching engine.

Efficient AMMs

Automated Market Makers no longer manage reserves of outcome tokens. They operate directly against exposure, expressing prices over payoff profiles rather than over inventory.

This allows AMMs to support large, multi-outcome markets without fragmenting liquidity across outcomes or markets.

On-chain liquidity becomes a function of exposure capacity, not inventory.

Result: Prediction Market 2.0 Applications

A New Universe of Apps

- Applications become thin configuration layers, not full financial systems.
- AMMs can operate over massive, multi-outcome markets without liquidity fragmenting by outcome.
- Users participate across all applications from a single on-chain balance.
- Applications launch into an ecosystem of already-onboarded users.
- Builders design markets with full control over pricing, fees, and resolution mechanics.

Prediction Market 2.0 Applications Unleashed.

Epilogue: ELM Tokens

Overview

Tokens have a unique place in the PredictionSwap protocol. This short section outlines how they function as native artifacts.

The protocol collateral token

eUSDC is pegged 1:1 to USDC and is the unit of account in the Exposure Ledger Machine.

A Participant's eUSDC is automatically committed and released when trading as exposure is reduced or increased.

Position tokens

Position tokens are interfaces to exposure recorded on the ELM.

Position tokens can be transferred, traded, or composed by applications much like traditional outcome tokens. Transferring a position token updates exposure accordingly and adjusts participants' exposure and collateral positions.

Merging, Splitting, Converting, Redeeming transactions are no longer required. With all accounting happening automatically in the ELM.

Tokens are interfaces to the Exposure Ledger Machine.

PredictionSwap is deployed on testnet

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