F L O F M A T R I X

Fractal Liquidity & Order Flow Trading System

ADVANCED CAPABILITIES & EPISTEMIC ENGINE

Options Selling • Iron Condors • EOD Flatten • Carry Trade • AI Learning Layer

PART A: Safety & Structural Toggles (T49–T50)
PART B: Options Selling Framework (Spreads, 0-DTE, Iron Condors, GEX Gate)
PART C: Forex Carry Trade Module (M15)
PART D: Epistemic Engine — AI Backtesting & Knowledge Graph

Version:	**3.3 (Advanced Capabilities)**
Classification:	**CONFIDENTIAL**

P A R T A

Safety & Structural Toggles

1. T49: Hard End-of-Day Flatten

If you do not want overnight equity exposure, the bot needs an absolute kill switch that fires regardless of trade state, confluence grade, or runner status. This is a safety mechanism, not a strategy decision.

ELEMENT	SPECIFICATION
Trigger Time	3:55 PM EST (5 minutes before the 4:00 PM close). Configurable via eod_flatten_time. Not 4:00 sharp because the final minutes of trading have widening spreads and reduced liquidity — exiting at 3:55 gets better fills.
Actions	1. Cancel ALL resting orders (limit entries, OCO brackets, trailing stops). 2. Market-exit ALL open positions immediately. 3. Set the bot to a DORMANT state until the next session's Killzone opens. 4. Log every flattened position with the P&L that was locked in.
Override Behavior	The EOD Flatten is ABSOLUTE. It overrides Phase 1 partials, Phase 2 runners, Phase 3 climax exits, and even the Toxicity Exit timer. At 3:55 PM, everything closes. No exceptions.
Profiles Active	Equities: ON (default). Options: ON (default — 0-DTE contracts expire worthless if not closed). Futures: OFF (default — futures traders may hold overnight). Crypto: OFF (24/7 market). Forex: OFF (carry trades hold for weeks).
Safety Classification	SAFETY-CRITICAL. Same tier as T24 (OCO Bracket). Cannot be disabled in live mode for Equities/Options profiles. The LIVE_MODE flag enforces this.

```
[constants.eod_flatten]
flatten_time_est     = "15:55"    # 3:55 PM EST
warning_minutes      = 10          # Log warning at 3:45 PM
force_market_exit    = true        # Always market orders, never limit
cancel_all_resting   = true
```

2. T50: Chop-to-Condor Routing

When the Chop Detector (T42) detects a range-bound market, the bot currently sits idle. T50 monetizes this idle time by routing an Iron Condor that profits from the range continuing. Instead of hiding from chop, the bot sells premium on both sides of the range.

2.1 How It Works

STEP	LOGIC
1	T42 (Chop Detector) fires: VA Width < 1.5 × Daily ATR AND abs(20 SMA slope) < 0.01. The bot would normally block all directional trades.

2	If T50 is ON AND T46 (Options Routing) is ON: instead of going dormant, the bot queries the SessionProfiler for the current Value Area High (VAH) and Value Area Low (VAL).
3	The OptionsRouter builds an Iron Condor using the VA boundaries as structural anchors for the short strikes. Short Call strike = nearest strike at or above VAH. Short Put strike = nearest strike at or below VAL. Wing width = configurable (default: 2 strikes wide for defined risk).
4	Liquidity check on all 4 legs. If any leg fails the bid/ask spread or open interest threshold, ABORT. Iron Condors in illiquid strikes are execution nightmares.
5	Submit the Iron Condor as a single order (most brokers support multi-leg options orders). Max loss = wing width − premium collected. Max gain = premium collected.
6	CRITICAL: Monitor for chop ending. Every 15 minutes (same interval as T42 re-evaluation), check if chop conditions still hold. If T42 flips from chop-detected to chop-cleared (VA expanding or SMA trending), IMMEDIATELY close the entire Iron Condor at market. A breakout from the range will rapidly expand losses on the breached side.

2.2 Risk Management

ELEMENT	SPECIFICATION
Max Risk Per Condor	Same % as a B-grade directional trade (0.5–1.0% equity). Iron Condors are lower conviction than directional setups, so they get B-grade sizing.
Max Concurrent Condors	1 per underlying. Never stack multiple Iron Condors on the same symbol. If SPY already has a condor, wait for it to close before opening another.
Profit Target	Close at 50% of max premium collected. If you collected $2.00 credit, close when the condor can be bought back for $1.00. Holding to full expiration maximizes gamma risk.
Breakout Exit	If T42 flips (chop cleared), close immediately. If price touches either short strike before T42 flips, close the threatened side and let the safe side expire. This converts the Iron Condor into a single credit spread.
EOD Flatten Integration	T49 (EOD Flatten) applies to Iron Condors. Any open condor is closed at 3:55 PM EST. 0-DTE condors must be monitored especially tightly in the final hour.

P A R T B

Options Selling Framework

3. Options Selling Architecture

The existing OptionsRouter (M14) only buys options (Calls and Puts). This section extends it to sell options as spreads, with complete risk controls for the fundamentally different risk profile of short options.

3.1 Buying vs. Selling: Why the Risk Framework Must Be Different

DIMENSION	BUYING OPTIONS (existing)	SELLING OPTIONS (new)
Max Loss	Premium paid. Known at entry. Cannot lose more.	Spread width − premium collected (for spreads). UNLIMITED for naked sells. We NEVER sell naked.
Theta (Time Decay)	Working against you. Premium erodes daily.	Working FOR you. Premium erodes in your favor.
Gamma Risk	Minimal. You paid a fixed premium.	EXTREME on 0-DTE. A 2-point move can expand losses exponentially. This is the primary danger of selling.
IV Impact	IV crush hurts you (v3.2 Fix D).	IV crush HELPS you. Selling in high IV is advantageous.
FLOF Signal Alignment	Buy when FLOF confirms a directional move.	Sell when FLOF confirms a zone will HOLD (absorption, institutional defense) or when T42 confirms chop.

CRITICAL SAFETY RULE: NO NAKED SELLING

The FLOF Matrix will NEVER sell a naked option (uncovered call or put). All sold options must be part of a defined-risk spread. This is enforced at the code level: the OptionsRouter's sell functions always construct a spread with a protective wing. Even if the user configures the system to sell, the protective wing is mandatory. This is a LIVE_MODE safety lock.

3.2 The Four Options Strategies

STRATEGY	DIRECTION	TRIGGER	IV ZONE	DESCRIPTION
Buy Call	Bullish	A/A+ Long Signal	**Low/Med**	Existing behavior. Buy a Call when FLOF confirms a bullish setup with low/medium IV.
Buy Put	Bearish	A/A+ Short Signal	**Low/Med**	Existing behavior. Buy a Put when FLOF confirms a bearish setup with low/medium IV.
Bull Put Spread (sell)	Bullish	A/A+ Long Signal	**High**	NEW. When IV is high (IVR > 80%), sell a put spread instead of buying a call. Sell a put at/below the POI

				level (structurally defended), buy a lower put as protection. Profits from IV crush + directional move.
Bear Call Spread (sell)	Bearish	A/A+ Short Signal	**High**	NEW. When IV is high, sell a call spread instead of buying a put. Sell a call at/above the supply zone, buy a higher call as protection.
Iron Condor	Neutral	T42 Chop Detected	**Any**	NEW. Via T50 (Chop-to-Condor). Sell premium on both sides of the range using VAH/VAL as structural anchors. No directional bias required.

3.3 The GEX Gate (Gamma Exposure Filter)

Gamma Exposure (GEX) measures how much options dealers need to hedge their positions. When aggregate GEX is positive, dealers are long gamma and their hedging dampens price moves (stable market). When GEX is deeply negative, dealers are short gamma and their hedging amplifies moves (volatile, trend-following market). Selling options in negative GEX is extremely dangerous because moves accelerate rather than mean-revert.

ELEMENT	SPECIFICATION
Data Source	SpotGamma API, or calculated from options open interest data (free from CBOE for SPX/SPY). Updated at market open and recalculated hourly.
GEX Positive	Dealers are long gamma. Market is stable and mean-reverting. SAFE to sell options and Iron Condors. This is the ideal environment for premium selling.
GEX Negative	Dealers are short gamma. Market moves are amplified. BLOCK all options selling. Only buying is permitted. Iron Condors via T50 are also blocked. The GEX Gate overrides the Chop Detector — even if T42 says chop, negative GEX means the chop can explosively break out.
GEX Neutral	Dealers are roughly hedged. Selling is permitted but with tighter wing widths (2 strikes instead of 3) for reduced risk.

3.4 0-DTE Specific Controls

CONTROL	SPECIFICATION
Grade Requirement	0-DTE buying: A+ only (maximum conviction required for maximum theta risk). 0-DTE selling: B or above (theta works in your favor, lower conviction acceptable).
Time Cutoff	No new 0-DTE positions after 2:00 PM EST. Gamma accelerates exponentially in the final 2 hours. Existing 0-DTE positions must be closed by 3:30 PM (before EOD Flatten).
GEX Gate Required	0-DTE selling is ONLY permitted when GEX is positive. Negative GEX + 0-DTE selling = account-ending risk. This is a hard gate, not a soft warning.
Max Allocation	Total 0-DTE exposure capped at 3% of account equity (across all 0-DTE positions combined). This limits total gamma exposure regardless of how many setups fire.

Short Strike Placement	For sold spreads: short strike must be at a structurally defended level. Use the Premium/Discount filter (G1) as the anchor: sell puts in the discount zone (institutional demand below), sell calls in the premium zone (institutional supply above). The SMC structure provides a logical stop.

```
[constants.options_selling]
naked_selling_allowed   = false   # SAFETY LOCK. Never true in production.
wing_width_default      = 2       # strikes wide
wing_width_neg_gex      = 0       # 0 = selling blocked in neg GEX
condor_profit_target    = 0.50    # Close at 50% of premium collected
max_concurrent_condors  = 1       # Per underlying
zero_dte_max_alloc_pct  = 0.03    # 3% of equity max
zero_dte_cutoff_est     = "14:00" # No new 0-DTE after 2 PM
zero_dte_close_est      = "15:30" # Close all 0-DTE by 3:30 PM
gex_source              = "spotgamma" # or "cboe_calculated"
gex_refresh_minutes     = 60
```

P A R T C

Forex Carry Trade Module

4. Carry Trade Module (M15)

Carry trading profits from interest rate differentials between currencies. You borrow a low-interest-rate currency and invest in a high-interest-rate currency, earning the "carry" (swap) daily. This is a macro strategy held for weeks or months — fundamentally different from the intraday FLOF momentum engine.

4.1 Why It Must Be Separate From the Predator State Machine

DIMENSION	FLOF INTRADAY (Predator)	CARRY TRADE (M15)
Timeframe	1m–15m execution. Trades last minutes to hours.	Daily/Weekly analysis. Positions held weeks to months.
Entry Logic	CHOCH + Order Flow + Confluence Rubric	Interest rate differential + trend alignment + risk-off/risk-on sentiment
Stop Loss	HVN/LVN Moat, 1m ATR-based	Weekly ATR-based or structural weekly swing point
Take Profit	Phase 1/2/3 structural trail	No fixed target. Hold as long as carry is positive and trend is intact. Exit on trend reversal or rate change.
Position Sizing	1–2% per trade based on grade	Minimal leverage (1–3x max). Conservative sizing because drawdowns can last weeks.

4.2 Module Architecture

ELEMENT	SPECIFICATION
Pair Selection	Maintain a table of swap rates per currency pair (updated weekly from broker data). Filter for pairs where the daily swap (carry) is positive in the intended direction. Rank by swap magnitude: highest positive carry = most attractive. Common carry pairs: AUD/JPY, NZD/JPY, USD/TRY, USD/MXN (high-yield vs. low-yield).
Trend Filter	Use the HTFStructureMapper (M03) on the WEEKLY chart to determine the macro trend. Only enter carry trades IN the direction of both the carry AND the weekly trend. If the weekly trend opposes the carry direction, NO ENTRY. A carry trade against the trend gets destroyed by capital losses that overwhelm the swap income. This is the one place where the existing FLOF infrastructure directly benefits carry trading: the Weekly 200 SMA and macro bias from M03 act as the trend filter.
Risk-Off Detector	Carry trades are highly sensitive to risk sentiment. In risk-off environments (VIX spike, equity selloff), carry currencies get crushed as capital flows to safe havens (JPY, CHF, USD). Monitor VIX (for equity-linked pairs) or a currency volatility index. If VIX > 25 (configurable): block new carry entries and tighten stops on existing positions.

	If VIX > 35: close all carry positions immediately (risk-off panic).
Entry Execution	Entry is NOT based on CHOCH or Kill Mode. Entry is a limit order placed at the Weekly 20 SMA pullback or a Weekly Order Block. The Predator State Machine is NOT involved. M15 has its own simple state: SCANNING (looking for pullback entry), POSITIONED (holding), EXITING (trend reversal detected). Leverage: max 3x. Configurable per pair. High-yield EM pairs (TRY, MXN) = 1x max due to event risk.
Exit Logic	Exit when: (a) weekly trend reverses (Weekly BOS against position), OR (b) swap rate turns negative (central bank rate change), OR (c) Risk-Off Detector triggers VIX > 35 emergency exit, OR (d) trailing stop hit (2 × Weekly ATR from peak equity).
Shared Infrastructure	Broker connection (same OANDA/FXCM API as Forex profile) RiskOverlord (Nuclear Flatten protects carry positions too) HTFStructureMapper (Weekly chart trend + 200 SMA for trend filter) Configuration system (TOML profile, hot-reload in paper mode)

```
[carry_trade]
enabled                = false   # Only active in Forex profile when desired
max_leverage           = 3.0
max_leverage_em        = 1.0     # EM pairs (TRY, MXN, ZAR)
vix_caution_threshold  = 25      # Block new entries
vix_panic_threshold    = 35      # Close all carry positions
weekly_atr_trail_mult  = 2.0
swap_update_frequency  = "weekly"

[carry_trade.pairs]
favorites = ["AUD/JPY", "NZD/JPY", "USD/MXN"]
```

P A R T D

Epistemic Engine — AI Learning Layer

5. Epistemic Engine Overview

The Epistemic Engine is a meta-layer that sits on top of NautilusTrader. It does not trade. It observes, analyzes, and learns from every trade the bot takes (in backtesting, paper, and live). Over time, it builds a Knowledge Graph of instrument-specific behaviors and produces recommendations for tuning the TOML configuration per symbol.

The name comes from "epistemic" — relating to knowledge and the conditions for acquiring it. The engine's job is to turn raw trade data into structured knowledge that makes the bot progressively smarter.

5.1 The Four-Layer Architecture

LAYER	NAME	TECHNOLOGY	PURPOSE
1	**Batch Runner**	Python + NautilusTrader headless mode	Runs thousands of parameterized backtests in parallel. Tests toggle combinations, constant variations, and cross-asset permutations. Outputs standardized JSON trade logs.
2	**Trade Logger & Vectorizer**	PostgreSQL + pgvector (or Pinecone/Milvus)	Every trade is logged as a structured record AND a rich text summary that gets embedded into a vector database. Enables semantic similarity search: "find trades that looked like this one."
3	**Knowledge Graph**	Neo4j (graph database)	Maps relationships between instruments, setups, regimes, and outcomes. Discovers patterns like "TSLA performs poorly with Decisional OBs" or "BTC Rejection Blocks have 72% win rate during Asian session."
4	**LLM RAG Interface**	LangChain/LlamaIndex + Claude API	A conversational interface where you ask questions grounded in your actual data. The LLM queries both the vector DB and Knowledge Graph to produce answers with citations to specific trades and backtests.

5.2 Layer 1: The Batch Runner

ELEMENT	SPECIFICATION
Input	A base TOML config + a JSON "experiment manifest" that defines which parameters to vary. Example: {"vary": {"T39": [true, false], "T47": [true, false], "phase1_a_plus_scaleout": [0.20, 0.25, 0.30]}, "instruments": ["ES", "AAPL", "BTC"], "date_range": ["2024-01-01", "2024-12-31"]}.
Execution	For each combination in the manifest, the Batch Runner generates a temporary TOML file, launches a headless NautilusTrader backtest, captures the trade log, and stores results. Runs in parallel (multiprocessing pool, configurable worker count).

Output	One JSON file per backtest run containing: run_id, config_hash, instrument, date_range, total_trades, win_rate, profit_factor, max_drawdown, sharpe_ratio, and the full list of individual trade records.
Anti-Overfitting Guard	CRITICAL: The Batch Runner automatically splits data into in-sample (70%) and out-of-sample (30%). Only configurations that perform well on BOTH samples are flagged as valid. Configurations that excel in-sample but fail out-of-sample are flagged as OVERFIT and excluded from recommendations.

5.3 Layer 2: Trade Log Schema

Every trade — backtest, paper, or live — produces a standardized JSON record. This is the atomic unit of knowledge in the Epistemic Engine.

```
{
  "trade_id": "T-2024-12-15-001",
  "source": "backtest|paper|live",
  "instrument": "AAPL",
  "asset_class": "equities",
  "direction": "long",
  "grade": "A+",
  "total_score": 16,
  "tier1_score": 10, "tier2_score": 4, "tier3_score": 2,
  "gates_passed": ["G1_premium_discount", "G2_inducement", "G3_chop"],
  "poi_type": "REJECTION_BLOCK",
  "poi_tags": {"is_extreme": true, "is_unicorn": false, "is_sweep": true},
  "entry_price": 195.42, "stop_price": 194.80, "target_price": 197.50,
  "result_r": 2.8,
  "result_pnl_dollars": 342.00,
  "phase1_hit": true, "phase2_hit": true, "phase3_hit": false,
  "exit_reason": "structural_trail",
  "tape_conditions": {"absorption": true, "toxicity_fired": false},
  "regime": "trending", "killzone": "NY_AM",
  "toggles_active": ["T07","T08","T17","T36","T39","T41","T44","T47"],
  "vwap_relative": "below_minus_1sd",
  "duration_minutes": 47,
  "text_summary": "Long AAPL. A+ grade Extreme Rejection Block at 195.40...",
}
```

The text_summary field is auto-generated as a natural language description of the trade. This is the field that gets embedded into the vector database for semantic search.

5.4 Layer 3: Knowledge Graph Schema (Neo4j)

TYPE	NODE / EDGE	DESCRIPTION & EXAMPLES
NODE	**Instrument**	AAPL, SPY, ES, BTC, EUR/USD. Each instrument accumulates properties over time: avg_daily_range, chop_frequency, rejection_block_win_rate, etc.

NODE	**Setup Type**	Extreme_OB, Decisional_OB, Unicorn, Rejection_Block, Gap_FVG, Flip_Zone, Synthetic_MA. These are the POI types plus the hierarchy tags.
NODE	**Market Regime**	Trending_Bullish, Trending_Bearish, Chop, High_IV, Low_IV, Risk_Off, Risk_On. Regime at time of trade.
NODE	**Toggle Config**	A snapshot of which toggles were active for a given backtest run. Allows comparing results across different toggle configurations.
NODE	**Session**	NY_AM, NY_PM, London, Asian, Crypto_UTC. Time window of the trade.
EDGE	**PERFORMS_WELL_WITH**	[AAPL] → PERFORMS_WELL_WITH → [Extreme_OB]. Created when win rate for this combination exceeds the global average by ≥ 1 standard deviation.
EDGE	**PERFORMS_POORLY_WITH**	[TSLA] → PERFORMS_POORLY_WITH → [Decisional_OB]. Created when win rate for this combination is ≥ 1 SD below average.
EDGE	**OPTIMAL_TOGGLE**	[BTC] → OPTIMAL_TOGGLE → [T41_Rejection_Blocks]. Created when enabling this toggle improves the instrument's risk-adjusted return by ≥ 10%.
EDGE	**THRIVES_IN**	[SPY] → THRIVES_IN → [Trending_Bullish + NY_AM]. Created when the win rate for this instrument in this regime + session exceeds 65%.

5.5 Layer 4: LLM RAG Interface

ELEMENT	SPECIFICATION
LLM Provider	Claude API (Anthropic) as the primary reasoning engine. Model: claude-sonnet-4-20250514 or later. Chosen for strong analytical reasoning and ability to synthesize structured data.
RAG Pipeline	LangChain or LlamaIndex orchestrates the retrieval. When you ask a question, the pipeline: (1) queries the vector DB for semantically similar trades, (2) queries the Knowledge Graph for relevant relationships, (3) formats both result sets into a context window, (4) sends the context + your question to the LLM.
Example Queries	"Why are we losing on QQQ but winning on SPY?" "What's the optimal T47 scale-out for BTC Rejection Blocks?" "Show me all A+ trades that lost money. What do they have in common?" "Which toggle has the single largest impact on risk-adjusted returns for ES?" "Should I enable T39 (Extreme/Decisional) for AAPL? What does the data say?"
Output Format	The LLM responds with: (1) a plain-language answer, (2) citations to specific trade IDs and backtest run IDs, (3) a confidence level (based on sample size), and (4) optionally, a TOML snippet with the recommended configuration change.
Human Approval Gate	CRITICAL: The LLM NEVER directly modifies the TOML or the live bot. It produces recommendations that a human reviews and approves. The approval workflow is: LLM proposes → human reviews → human approves → TOML updated → bot reloaded. No autonomous config changes in production.

5.6 Instrument-Specific Profiling (Dynamic TOML)

This is the highest-value output of the Epistemic Engine: per-instrument TOML sub-profiles that tune the bot's behavior based on empirically validated findings.

STEP	PROCESS
1	Every weekend, the Epistemic Engine analyzes the last 90 days of trade data per instrument. It queries the Knowledge Graph for all edges connected to that instrument.
2	The LLM synthesizes the graph relationships into a behavioral profile. Example for NVDA: "High momentum, low chop frequency, Extreme OBs have 78% win rate (vs. 62% average), Rejection Blocks underperform (51% vs. 67% average), optimal Phase 1 scale-out is 20% at 2.5R for A+ trades."
3	The LLM generates a TOML sub-profile for that instrument: constants.NVDA.toml. This sub-profile ONLY contains overrides — values that differ from the base equities profile. Example: T41 = OFF (Rejection Blocks underperform for NVDA), phase1_a_plus_scaleout = 0.20, etc.
4	The proposed sub-profile is presented to the human for review. It includes: the recommended changes, the data citations (trade IDs, win rates, sample sizes), the confidence level, and a comparison to the current configuration.
5	If approved, the sub-profile is saved and loaded at next bot startup. The loading hierarchy becomes: flof_base.toml → profile_equities.toml → constants.NVDA.toml. Each layer overrides only the values it specifies.

CONSTRAINED OPTIMIZATION — NOT BRUTE FORCE

The AI does NOT brute-force all 48 toggles × all constants × all instruments. That would produce overfit garbage. Instead, it asks TARGETED QUESTIONS with small parameter spaces:

- "For AAPL, is T39 (Extreme priority) beneficial?" → Tests 1 toggle, 2 states (on/off), 1 instrument.
- "For BTC, what is the optimal dead_tape_duration?" → Tests 1 constant, 5 values (3/5/7/10/15 min), 1 instrument.
- "Across all equities, which single toggle has the largest impact?" → Tests 48 toggles, 2 states each, but compares RELATIVE impact rather than absolute.

Each question produces a testable hypothesis with a sample size requirement (min 50 trades). Only statistically significant findings (≥ 1 SD from mean) get stored in the Knowledge Graph.

6. New Toggles & Modules Summary

ID	FEATURE	LAYER	DEFAULT	DEPENDS ON	WHAT HAPPENS WHEN OFF
T49	**Hard EOD Flatten**	Safety	**ON***	— (root)	No automatic position closure at session end. Open positions carry overnight. *ON for Equities/Options, OFF for Futures/Crypto/Forex.
T50	**Chop-to-Condor Routing**	Execution	**OFF**	T42 + T46	Bot sits idle during chop. No Iron Condor routing. Requires both Chop Detector and Options Routing to be active.

MODULE	ID	DESCRIPTION
CarryTradeModule	M15	Weekly-timeframe carry trade logic. Separate state machine from Predator. Uses HTFStructureMapper for trend filtering. Includes VIX-based risk-off detector.
EpistemicEngine	E01–E04	Four-layer meta-system: Batch Runner (E01), Trade Logger (E02), Knowledge Graph (E03), LLM RAG Interface (E04). Sits on top of NautilusTrader. Does not trade directly.

7. Complete System Summary (v3.3)

COMPONENT	TOTAL
Feature Toggles	50 (T01–T50). 42 universal + 4 asset-class + 2 optimization + 2 advanced (EOD Flatten, Chop-to-Condor). Plus 2 deferred (T35, T37).
Modules	16: 12 original + SessionProfiler + LiquidationFeed + OptionsRouter + CarryTradeModule.
Options Strategies	5: Buy Call, Buy Put, Bull Put Spread (sell), Bear Call Spread (sell), Iron Condor. All selling done as spreads only (no naked).
Epistemic Engine Layers	4: Batch Runner, Trade Logger + Vector DB, Knowledge Graph (Neo4j), LLM RAG Interface (Claude API).
Asset Class Profiles	5 + Carry: Futures, Forex (intraday), Forex (carry), Crypto, Equities, Options.
Safety Mechanisms	RiskOverlord, OCO Brackets, EOD Flatten (T49), GEX Gate (options selling), No-Naked-Sell Lock, Human Approval Gate (Epistemic Engine), 0-DTE Time Cutoff, VIX Risk-Off Detector (carry).

IMPLEMENTATION PRIORITY (REVISED)

Phase 1 (Weeks 1–4): ES Futures core. Predator State Machine, POIMapper, ConfluenceScorer, RiskOverlord. Paper trade ES.

Phase 2 (Weeks 5–8): Crypto profile (Binance WS, OI Delta, LiquidationFeed). Equities profile (SIP, Gap-FVG, EOD Flatten). Options buying (OptionsRouter M14, IV Crush filter).

Phase 3 (Weeks 9–12): Options selling (spreads, GEX gate, 0-DTE controls). Iron Condors (T50, Chop-to-Condor). Forex intraday profile.

Phase 4 (Weeks 13–16): Forex carry trade module (M15, VIX detector). Trade Logger + standardized JSON schema.

Phase 5 (Weeks 17–20): Epistemic Engine. Batch Runner, Vector DB, Knowledge Graph, LLM RAG. Initial per-instrument profiling.

Phase 6 (Ongoing): Dynamic TOML generation. Weekly AI analysis cycles. Continuous improvement loop.

WHAT STAYS SEPARATE

- Crypto Arbitrage (CEX/DEX, cross-exchange): Separate system. Sub-millisecond latency, colocation, zero SMC dependency.
- Yield Farming (DeFi): Separate system. Web3/Solidity stack, on-chain gas management, liquidity pool monitoring.
- These are infrastructure plays, not strategy plays. FLOF is a strategy engine. Keep it focused.

E N D O F D O C U M E N T

FLOF Matrix — Advanced Capabilities & Epistemic Engine v3.3

Read in conjunction with all prior FLOF Matrix documents (v1.0 through v3.2).