

AETHER QUANT-OS

Multi-Agent Algorithmic Framework with Deterministic Risk Governance

Classification: Public Release / Investor Brief Version: 2.0 Operational Benchmark: S&P 500 (SPY)

1. Executive Summary & Core Mission

AETHER QUANT-OS is an institutional-grade quantitative computing platform engineered to solve the primary vulnerability of artificial intelligence in financial markets: semantic hallucination and narrative bias. The system establishes a **strict bicameral framework** where qualitative hypothesis generation is completely decoupled from trade execution and capital allocation.

BICAMERAL ARCHITECTURE

Language models research, deliberate, and formulate trading theses. A deterministic engine written in pure code holds sovereign veto power over execution.

DETERMINISTIC INTEGRITY

Zero tolerance for heuristic interpolation. Missing macroeconomic or price variables trigger a formal "No Data" state, prohibiting speculative assumptions.

RELATIVE ALPHA STANDARD

Absolute positive return is rejected as a proof of efficacy. Success is measured exclusively as cost-adjusted outperformance relative to the SPY benchmark.

2. High-Level Architectural Specifications

SYSTEM DIMENSION	DESIGN STANDARD & IMPLEMENTATION PRINCIPLE
Operating Topology	Synchronous periodic deliberative cycles aligned with US equity market hours.
Execution Boundary	AI agents operate in air-gapped runtimes with zero broker credentials or write access.
Position Sizing	Dynamic sizing calculated via Average True Range (ATR) with fixed capital-at-risk limits.
Strategic Core Reserve	Structural 50.0% capital allocation to index core, protected by a 200-day moving average filter.
Real-Time Observability	Sub-second low-latency streaming telemetry paired with persistent ex-post decision logs.
Redundancy & Failover	Active multi-provider routing with seamless degradation to an algorithmic non-AI safe mode.
Institutional Validation	Mandatory 90-day forward-testing observation trial in simulated live conditions before capital deployment.

3. Operational Dynamics: The Bicameral Decision Loop

During each active trading cycle, the coverage universe is systematically screened. Signals transit through a multi-stage qualitative and quantitative pipeline before qualifying for broker transmission:



4. Multi-Agent Ecosystem Specialization

AGENT	ENGINE TYPE	OPERATIONAL MANDATE IN WAR ROOM	GOVERNANCE ROLE
VEX	Deterministic	Algorithmic momentum, volatility, and mean-reversion analysis.	Active Vote
NOVA	LLM Inference	Corporate disclosures, event catalysts, and qualitative sentiment.	Active Vote
MATT	LLM Inference	Chief portfolio strategist: thesis formulation with explicit invalidation rules.	Final Verdict
GUARD	Deterministic	Sovereign risk engine: exposure limits, bracket stops, and order transmission.	Absolute Veto
LUKE	Hybrid	Intra-cycle surveillance: abnormal volume and critical anomaly monitoring.	Immediate Alert
AUDITOR	LLM Inference	Ex-post forensic analysis: calibration metrics, Brier scores, and tactical review.	Active Vote
SCOUT	Hybrid	Systematic equity screening based on price momentum and relative volume.	Universe Filter
ATLAS	Hybrid	Systemic risk modeling: cross-asset portfolio correlations and portfolio Beta.	Consultative
CRONOS	Deterministic	Macroeconomic calendar tracking (FOMC rate decisions, CPI prints, NFP data).	Event Blackout
NEXUS	LLM Inference	Counterfactual analysis: continuous auditing of trade proposals rejected by GUARD.	Research Log

5. Deterministic Risk Architecture (GUARD)

The deterministic risk gateway acts as an immutable firewall. No trade proposal reaches the execution broker unless it simultaneously complies with every programmed risk restriction:

RISK PARAMETER	ENFORCED ALGORITHMIC CONSTRAINT	INSTITUTIONAL OBJECTIVE
Per-Trade Exposure Cap	Maximum position risk hard-capped at 1.0% of total portfolio equity via ATR.	Capital Preservation
Mandatory Bracket Orders	Native Stop-Loss and Take-Profit orders deployed directly on broker infrastructure.	Latency Immunity
Automated Break-Even	Stop-loss ascends monotonically to entry price upon reaching +1 ATR unrealized gain.	Downside Neutralization
Earnings Blackout Window	Complete purchase restriction within 48 hours of scheduled corporate earnings.	Gap-Down Protection
Sector Concentration Limit	Hard maximum of 2 concurrent open positions within the same industry sector.	Uncorrelated Exposure
Macro Trend Filter	New buy orders disabled when benchmark trades below its 200-day moving average.	Systemic Alignment

6. Institutional Audit & Live Capital Deployment Standard

The Five Unconditional Institutional Criteria

To mathematically verify quantitative edge before permitting live capital allocation, the platform must satisfy all five institutional gates cumulatively:

- 1. Observation Horizon:** A minimum of 90 continuous days in forward live-simulated markets.
- 2. Statistical Sample:** A verified sample exceeding 50 closed, audited round-trip positions.
- 3. Proven Net Alpha:** Net positive excess return over the SPY benchmark after all simulated friction.
- 4. Drawdown Superiority:** Maximum recorded peak-to-trough drawdown strictly below benchmark drawdown.
- 5. Slippage Tolerance:** Execution delta between theoretical trigger price and fills bounded within parameters.

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