Product, Design & Technical Architecture

PerpDesk.xyz — Your Personal AI Trading Desk

Purpose of This Document

This document explains what PerpDesk is building, how it works, and why the product is fundamentally different from existing trading platforms. It covers PerpDesk's coordinated AI agent architecture, modern execution tools, design philosophy, and technical approach. Written for investors and stakeholders evaluating PerpDesk's product vision and competitive positioning.

Table of Contents

Contact: Rush (dev.scalptur@gmail.com) | Platform: perpdesk.xyz

1 Product Vision & Strategic Positioning

Core Vision

The core thesis:

- Markets never sleep — 24/7 perpetual futures require always-on tools and always-on intelligence
- Information moves faster than humans — manual processes create missed opportunities
- Traders need friction-free execution — every second between insight and execution matters
- Solo traders shouldn't trade solo — coordinated AI agents transform the individual into a desk

The Fundamental Shift

Most platforms optimise for *where* trades happen. PerpDesk optimises for *how* traders actually trade.

Traditional DEX Approach	PerpDesk's Approach
Build the fastest matching engine	Use proven liquidity, build the best trader tools
Optimise infrastructure performance	Optimise trader performance with AI agents
Add features competitors have	Add features traders actually need
Neutral, generic interfaces	Workflow-optimised design
One-size-fits-all order types	Flexible, programmable execution logic
No AI, no automation	8 coordinated AI agents as a unified desk team

The Market Gap

The perpetual DEX market spent 2020-2024 solving infrastructure: liquidity, matching engines, settlement, margin systems. These problems are solved.

The next competitive frontier is trader experience: How quickly can traders move from insight to execution? How much cognitive load is required? Can teams collaborate natively? Do interfaces adapt to 24/7 non-sleeping markets? Can AI agents coordinate to support the trader's decision-making?

> **PerpDesk exists because this gap is widening, not closing. And no incumbent is structured to close it.**

2 Design Philosophy: Trader-First by Construction

1. Workflow Over Screens

Principle: Traders think in sequences, not pages.

The natural trading flow is: Observe > Decide > Execute > Manage > Re-enter or Exit. PerpDesk is architected around this workflow, not isolated features. Every tool — and every agent — serves a specific point in the decision cycle.

2. Reduce Cognitive Load

Principle: In fast markets, cognitive overhead is risk.

How PerpDesk reduces load:

- **Template Reusability:** Save any setup, execute identical trades without recalculating
- **Information Hierarchy:** Show only decision-relevant data at each stage
- **Modern Toolsets:** Set up trades in advance of market moves, rather than reacting after
- **Agent Delegation:** Let agents handle scanning, monitoring, and preparation — trader focuses on decisions

Measured Impact: Fewer errors, faster decisions, meaningfully improved trading.

3. Workflow-Optimised Design

Principle: Neutral tools produce average outcomes. Traders need workflow-optimised design.

- **Automation where repetition adds no value** — auto-calculate position size, auto-set stops/targets, auto-cancel at specified times
- **Guardrails where emotion causes losses** — max loss limits, forced cool-downs after drawdowns, position size limits
- **Defaults that reflect professional behaviour** — percentage-based stops, time-based expiry, risk-first sizing

Amateur traders make predictable mistakes. PerpDesk's defaults guide toward professional habits while remaining fully customisable.

4. Human-in-the-Loop Automation

Principle: Automate execution, not judgment.

Every automated action includes clear confirmation, explicit risk summary, override capability, and audit trail. Agents propose, coordinate, and stage. The trader approves, overrides, or modifies. The trader always remains the Desk Lead.

3 The PerpDesk Agent Team: Coordinated AI Architecture

PerpDesk introduces 8 modular AI agents — not one bot, not one strategy, but a coordinated team. Each agent has a distinct role, configurable settings, and communicates with other agents before presenting recommendations to the trader. The trader is the Desk Lead.

> **This is not about replacing traders. It's about upgrading how they operate. PerpDesk takes the solo trader to the head of their own desk.**

Vanta — Regime Detection

Vanta monitors market microstructure in real-time to detect the current market regime — whether the market is compressing, trending, breaking out, or ranging. This is the foundational layer that informs all other agents.

- Analyses volatility clustering, volume patterns, and price structure
- Classifies market state: compression, expansion, trend, mean-reversion, choppy
- Broadcasts regime classification to all other agents before they act
- Configurable sensitivity — traders can tune how aggressively regime shifts are detected
- Prevents agents from applying trend strategies in ranging markets and vice versa

Luma — Signal Aggregator

Luma aggregates cross-venue data that no single chart can show. It monitors funding rates, open interest shifts, volume anomalies, and liquidation flows across multiple platforms simultaneously.

- Real-time funding rate divergence monitoring across venues
- Open interest change detection — rising OI with falling price signals different intent than rising OI with rising price
- Volume anomaly detection — unusual spikes relative to historical baselines
- Liquidation cascade risk assessment — proximity to major liquidation clusters
- Outputs are fed to Riven (Strategy Architect) to inform trade construction

Meridian — Macro Sentinel

Meridian watches the world outside the chart. It monitors macroeconomic events, regulatory announcements, sentiment shifts, and cross-asset correlations that affect crypto perpetual markets.

- Tracks scheduled macro events (Fed decisions, CPI releases, earnings) and flags proximity
- Monitors regulatory developments that could impact market structure
- Sentiment analysis from aggregated social and news sources
- Cross-asset correlation tracking (BTC-equity correlation, DXY inverse, etc.)
- Provides context layer — Riven won't build a breakout trade 30 minutes before FOMC

Riven — Strategy Architect

Riven is the strategy brain. It synthesises inputs from Vanta (regime), Luma (signals), and Meridian (macro) to construct structured trade plans. It doesn't just say 'buy' — it builds the complete setup.

- Constructs trade plans with entry, targets, stops, position sizing, and re-entry logic
- Supports multiple strategy archetypes: breakout, fade, momentum, range, hybrid
- Adapts strategy parameters based on current regime from Vanta
- Generates human-readable trade rationale explaining why the setup exists
- Passes completed trade plans to Koda (Execution) for timing and to Brix (Risk) for validation

Koda — Execution Specialist

Koda handles the how and when of trade execution. Once Riven builds the plan and Brix validates the risk, Koda determines optimal entry timing, order slicing, and adaptive positioning.

- Intelligent order routing — minimises slippage through execution optimisation
- Adaptive entry timing — waits for optimal liquidity conditions before executing
- Order slicing for larger positions — breaks trades into smaller pieces to reduce market impact
- Integrates with all PerpDesk execution tools (grid, elastic, duration, shortcut widgets)
- Monitors fill quality and adjusts approach for future executions

Brix — Risk Enforcer

Brix is the risk guardian. It operates at the portfolio level, not just per-trade. Every trade plan from Riven must pass through Brix before reaching the trader for approval.

- Portfolio-level exposure monitoring — total risk across all open positions
- Correlation clustering — flags when multiple positions are effectively the same bet
- Drawdown limits — auto-reduces exposure when portfolio drawdown exceeds thresholds
- Volatility-adjusted sizing — position sizes scale down in high-volatility regimes (from Vanta)
- Can veto or modify trade plans from Riven if they violate the trader's risk parameters
- Emotion-aware controls — enforces cool-down periods, consecutive loss limits, leverage locks

Lucid — Performance Analyst

Lucid is the desk's memory. It tracks every trade, every decision, every pattern — and surfaces insights that help the trader improve over time.

- Trade memory — complete history with context (what regime, what signals, what rationale)
- Behavioural pattern detection — identifies recurring mistakes (e.g., always overleveraging on Fridays)
- Edge decay monitoring — alerts when a strategy that was working starts underperforming
- Win/loss attribution — which agent configurations produce the best results
- Periodic performance reports delivered via catch-up reports through Telegram

Mentor — Education Guide

Mentor makes PerpDesk accessible to every trader, not just experienced ones. It translates agent decisions into learning opportunities and provides guided onboarding.

- Explains why agents made specific recommendations in plain language
- Runs paper trading simulations so new traders can practice with agents without risk
- Suggests configuration improvements based on the trader's history and skill level
- Provides contextual education — when Vanta detects a regime change, Mentor explains what it means
- Progressive disclosure — starts simple, reveals advanced features as the trader grows

4 Agent Coordination & Human-in-the-Loop

How Agents Work Together

PerpDesk's agents are not independent bots running in parallel. They form a coordinated pipeline where each agent's output becomes another agent's input. The coordination sequence:

Step 1: Environment Assessment

Vanta classifies the current market regime. Meridian flags any macro context. These two agents set the stage for everything else.

Step 2: Signal Detection

Luma aggregates cross-venue data and identifies anomalies, divergences, and opportunities within the context established by Vanta and Meridian.

Step 3: Strategy Construction

Riven receives the regime classification (Vanta), signal data (Luma), and macro context (Meridian). It synthesises these inputs to build a structured trade plan — entry, targets, stops, sizing, and rationale.

Step 4: Risk Validation

Brix reviews the trade plan against the trader's portfolio, existing positions, correlation exposure, and risk parameters. Brix can modify, scale down, or flag the plan.

Step 5: Execution Planning

Koda receives the risk-validated plan and determines optimal execution — timing, order type, slicing strategy, and which PerpDesk tools to use.

Step 6: Trader Approval

The complete package — trade plan, risk assessment, execution strategy, and rationale — is presented to the trader. The trader approves, modifies, or rejects.

Step 7: Post-Trade Analysis

Lucid records the outcome and context. Mentor surfaces learning insights. Both feed back into the system to improve future recommendations.

The Human-in-the-Loop Principle

> **Agents propose. Agents coordinate. Agents stage. The trader decides.**

PerpDesk is designed so that the trader is always the final decision-maker. The agents do the heavy lifting — scanning, analysing, constructing, validating — but execution only happens with explicit trader approval.

What the trader controls:

- Every trade requires explicit confirmation before execution
- Risk parameters are set by the trader — agents operate within these boundaries
- Any agent can be toggled on/off or have its sensitivity adjusted
- Override capability on any recommendation — the trader can modify and execute differently
- Emergency stop available at all times — instantly halts all agent activity
- Full audit trail — every agent action, recommendation, and trader decision is logged

What agents handle autonomously (within trader-set boundaries):

- Market scanning and regime detection (Vanta, Luma, Meridian)
- Catch-up report generation and delivery via Telegram
- Risk monitoring and drawdown alerts (Brix)
- Performance tracking and pattern detection (Lucid)
- Education suggestions and context (Mentor)

Configurable Agent Behaviour

Every agent has configurable toggles that traders can adjust without writing code. Sensitivity levels, alert thresholds, strategy preferences, risk tolerances — all controllable through the desk interface. Agent configurations can be saved, shared, and imported through the template marketplace.

Configuration examples by agent:

- **Vanta:** Regime sensitivity (aggressive vs conservative detection), volatility thresholds, lookback periods
- **Luma:** Which venues to monitor, funding rate alert levels, OI change thresholds
- **Meridian:** Which macro events to track, sentiment source weighting, correlation alert triggers
- **Riven:** Preferred strategy archetypes (breakout, fade, momentum), risk/reward minimums, position sizing rules
- **Koda:** Execution speed preference (immediate vs patient), slicing thresholds, preferred order types
- **Brix:** Max portfolio exposure, drawdown limits, correlation tolerance, cool-down durations
- **Lucid:** Reporting frequency, which patterns to flag, performance benchmark thresholds
- **Mentor:** Education detail level (beginner to advanced), notification frequency, simulation complexity

Configurations are portable — traders can export their agent setup, share it with their community, or import setups from top performers through the template marketplace.

5 Core Product Features

All tools are usable both manually by traders AND programmatically by agents — same toolset, two modes.

Category 1: Instant Execution

Shortcut Widgets (Execution Templates)

Purpose: Transform complex multi-step trades into single-keystroke execution.

What it solves: Slow execution in fast markets, copy-paste errors, forgetting stops/targets, rebuilding identical trades.

How it works: Traders define template parameters once (asset, size, leverage, order type, TP/SL, re-entry conditions, time constraints), save with keyboard shortcut, then execute in one keystroke with all parameters applied automatically. Koda (Execution Specialist) can also trigger shortcut widgets programmatically when conditions are met.

Advanced capabilities:

- Multi-asset templates (apply same logic across assets)
- Conditional execution (only execute if conditions met)
- Team coordination (shared templates ensure consistency)
- Performance tracking (measure which templates work)
- Agent-operable: Koda can invoke widgets as part of orchestrated execution plans

Benefits: *90% execution time reduction, near-zero error rate, minimal cognitive load.*

Grid Trading

Purpose: Automate buy-low-sell-high strategies in range-bound markets.

What it solves: Missing opportunities while offline, emotional decision-making in choppy markets, manual order fatigue. Future-proof capability as more traditional stocks and forex markets come on-chain for trading through perp DEXs.

How it works: Define price range, set grid levels, configure position size per level, set take-profit distance. System automatically places buy orders at each level, sells at target when filled, replaces buy orders after sells complete.

Advanced features:

- Asymmetric grids (more levels near key zones)
- Grid with trend bias
- Multi-asset grids
- Automatic stop if range breaks
- Vanta (Regime Detection) can pause grids when market shifts from ranging to trending

Ideal for: Ranging markets, pairs trading, 24/7 automation.

Category 2: Intelligence & Analytics

Intelligent Multipoint Indicator (IMI)

Purpose: Transform manual chart-watching into automated, multi-condition market scanning.

What it solves: Tab fatigue across multiple assets, missed setups while offline, inconsistent rule application.

How it works: Traders define multi-condition rules combining:

- Technical indicators (MACD, RSI, Stochastic, EMAs, Bollinger Bands)
- Market data (funding rate, open interest, liquidations, volume)
- Time-based logic (session-specific, duration filters)
- Cross-asset conditions (correlation, divergence)

Example scan: "Find assets where funding rate exceeds 0.1%, open interest increasing over 10%, RSI above 70, and price within 3% of 24h high" — alert or auto-populate short setup.

Output options:

- Alerts (push, email, webhooks)
- Dashboard population (ranked by signal strength)
- Auto-execution (with human confirmation)
- Direct feed to Luma agent for aggregation with other data sources

Benefits: No missed setups 24/7, monitor all available assets vs a few manually, rules applied exactly as defined, backtestable before deployment.

Advanced Market Analytics

Purpose: Provide professional-grade data directly in the execution environment.

What's included:

- **Liquidity Heatmaps** — bid/ask depth, support/resistance from order book
- **Liquidation Maps** — estimated liquidation clusters, cascade risk zones
- **Open Interest & Funding** — real-time changes, arbitrage opportunities, positioning gauge
- **Volume Delta & CVD** — buying vs selling pressure, institutional flow
- **Options Expiry Data** — major expiries, max pain, put/call ratio

Key differentiation: Competitors split this data across 5+ external platforms. PerpDesk unifies everything in the execution environment, reducing insight-to-execution friction to zero. Luma agent continuously processes this data to surface actionable insights.

Category 3: Time & Logic-Based Execution

Duration-Based & Time-Aware Orders

Purpose: Give traders control over temporal execution logic.

What it solves: Orders lingering indefinitely, unwanted overnight exposure, missing time-specific setups, manual management across time zones.

Order types:

- **Duration-Limited** — "Valid for 10 minutes" (prevents stale orders)
- **Time-Expiry** — "Cancel if not filled by 5 PM UTC" (avoid overnight positions)
- **Conditional Time Exits** — "Close at 11:59 PM if PnL positive" (lock intraday gains)
- **Session-Aware** — "Only trade during US session" (align with liquidity patterns)

Use case: Event trading around Fed announcements, earnings, or time-zone coordination for global teams. Koda agent can apply time logic automatically based on Meridian's macro event schedule.

Elastic & Re-Entry Orders

Purpose: Allow trades to persist as logic, not one-time events.

What it solves: Rebuilding setups after stop-outs, missing re-entry opportunities after whipsaws, inconsistent re-entry application.

How it works:

- **Simple re-entry:** If stopped out, automatically re-enter if price returns to entry within specified timeframe
- **Scaled re-entry:** Enter at 50% size on first signal, 100% on second, limited attempts per day
- **Condition-based re-entry:** Only re-enter if stopped out AND RSI drops below 30 AND funding turns negative
- **Elastic orders:** Orders that adjust based on market conditions (e.g., "If price reaches +8% and volume doubles, move TP from +10% to +15%")

Risk controls: Maximum re-entry attempts, total loss limits, cooldown between attempts. Brix agent enforces these limits at the portfolio level.

Category 4: Collaboration & Risk

Team Trading

Purpose: Enable professional trading desks to collaborate natively.

What it solves: Fragmented communication (Telegram/Slack + spreadsheets + exchange), unclear accountability, timezone handover friction, inconsistent execution.

Key features:

- **Role-based permissions** — Admin, Trader, Viewer with granular access control
- **Shared position management** — team-level view with individual attribution
- **Internal notes & handovers** — built-in communication for 24/7 coverage
- **Performance attribution** — track who made which trades, learn from top performers

- **Unified risk management** — team-level and individual exposure limits via Brix agent
- **Shared agent configurations** — team-wide agent settings ensure consistent strategy

Use case: International teams requiring 24/7 market coverage, trading groups managing shared capital, educational communities running live sessions.

Emotion-Aware Risk Controls

Purpose: Protect traders from behavioural mistakes during high-stress periods.

What it solves: Revenge trading after losses, overleveraging during streaks, emotional decisions, account blow-ups from tilt.

Controls available (enforced by Brix agent):

- **Loss-based cool-downs** — "If losses exceed $5,000 in 24h, disable trading for 5 hours"
- **Trade frequency limits** — "Maximum 20 trades per day"
- **Consecutive loss protection** — "After 3 consecutive losses, require 30-minute wait"
- **Win-streak scaling** — "After 5 wins, reduce max position by 50%"
- **Leverage locks** — "If daily PnL below -10%, reduce max leverage to 3x"
- **Time-of-day restrictions** — "No trading between midnight and 6 AM"

Psychological framework: Based on documented trading psychology research around recency bias, tilt, overconfidence, and decision fatigue. Lucid agent identifies patterns and Brix enforces the boundaries.

Category 5: AI-Powered Execution

Natural Language Trading

Purpose: Execute complex trades using natural language with human confirmation.

What it solves: Complex multi-parameter setups, learning curve for new traders, speed for experienced traders.

How it works: User inputs natural language command. The agent pipeline parses it into structured parameters, scans market for matches, calculates position details, generates execution plan. System presents clear risk summary. User confirms, trade executes.

Example: "Find assets where MACD crossed positive and RSI below 30, place $500 long at 3x leverage, TP 20%, SL 7%"

System finds 2 matching assets, shows SOL-PERP details — $500 at 3x = $1,500 exposure, max loss $105, max gain $300, risk/reward 1:2.86. User confirms or cancels.

Safety: Always requires human confirmation, clear risk summary, can't execute above limits, full audit trail, emergency stop available.

6 Technical Architecture

Architectural Overview

PerpDesk is intentionally architected as a modular trader layer built on proven infrastructure.

> **Core Principle: Don't reinvent infrastructure. Innovate on trader experience and AI agent coordination.**

Five-Layer Architecture:

Layer	Responsibility	Approach
Layer 1: Liquidity & Execution	Order matching, margin, settlement, liquidation	External — Orderly Network, with multi-venue routing planned (Hyperliquid, Lighter, etc.)
Layer 2: Data & Intelligence	Market data ingestion, indicator calculations, IMI scanning engine	PerpDesk-managed — real-time WebSocket feeds, TimescaleDB for time-series, multi-source aggregation
Layer 3: AI Agent Layer	8-agent coordination, regime detection, strategy construction, risk validation	Core IP — agent orchestration engine, cross-agent communication protocol, configurable behaviour
Layer 4: Application Layer	Workflow engine, template management, team collaboration, risk controls	Core IP — state management, real-time sync, permissions, audit trail, NLP command processor
Layer 5: User Interface	Trader-facing desk experience	React + Next.js, Lightweight Charts, real-time WebSocket updates, customisable layouts

By not rebuilding infrastructure, PerpDesk:

- ✓ Inherits proven security and settlement from Orderly Network
- ✓ Focuses 100% of engineering on trader experience and agent intelligence
- ✓ Can integrate multiple liquidity sources over time for best execution
- ✓ Ships trader-facing features faster than any infrastructure-focused competitor

7 Competitive Defensibility

Why This Is Hard to Copy

While individual features can be replicated, system-level integration with coordinated AI agents and a cohesive modern toolset creates compounding defensibility.

1. Coordinated Agent Architecture

Competitors would need to build not just one AI feature, but an entire multi-agent coordination system where agents communicate, validate, and build on each other's outputs. This is fundamentally different from adding a chatbot or a single AI feature.

2. Workflow-Level Abstraction

Competitors build isolated features with generic interfaces. PerpDesk integrates features into cohesive agent-assisted workflows. Copying one feature doesn't replicate the experience.

3. Data Network Effects

Template marketplace, agent configuration sharing, and IMI rule sharing create positive feedback loops. More users generate more templates and proven agent configs. New entrants start with empty marketplaces.

4. User Habit Formation

High switching costs from custom agent configurations, learned workflows, accumulated trading history (Lucid's memory), and team integrations create deep organisational lock-in.

5. Speed of Innovation

Incumbent DEXs allocate the majority of resources to infrastructure maintenance. PerpDesk allocates 100% to trader-layer innovation and agent intelligence. Result: PerpDesk ships trader-facing features faster.

6. Incumbent Build Risk

Incumbents would need to divert significant engineering resources for 18+ months to build an equivalent agentic desk. This carries brand risk, execution risk, and opportunity cost. Licensing PerpDesk is the lower-risk path for them — which is the B2B opportunity.

Summary

The PerpDesk Thesis

The Problem: Perpetual DEXs have converged on identical infrastructure and interfaces. Traders are left with outdated tools that don't match 24/7 market reality. No platform offers coordinated AI agent support.

The Solution: PerpDesk builds the missing trader layer — coordinated AI agents, intelligent tools, automated workflows, and decision-speed optimisation on top of proven liquidity.

The Product: A comprehensive AI-native trading desk featuring 8 coordinated agents (Vanta, Luma, Meridian, Riven, Koda, Brix, Lucid, Mentor), instant execution (shortcut widgets, grid trading), intelligence (IMI scanning, advanced analytics), time-based logic (duration orders, re-entry), collaboration (team trading), risk protection (emotion-aware controls), and natural language commands.

The Defensibility: Coordinated agent architecture (hard to replicate), workflow integration (hard to unbundle), data network effects (templates, agent configs, scans), user habit formation (deep lock-in).

The Dual GTM: Path 1: Direct-to-trader as the AI-native trading desk. Path 2: B2B white-label licensing of the agent infrastructure to DEXs and CEXs. Both paths are non-competing and reinforce each other.

The Ask: $500K for 25% equity to build the AI agent infrastructure and ship faster than competitors can copy.

The Outcome: Category-defining platform that traders want to use because it makes them better traders. PerpDesk takes the solo trader to the head of their own desk.

> **PerpDesk doesn't compete on infrastructure. PerpDesk competes on trader performance. And trader performance drives everything else.**

Contact: Rush (dev.scalptur@gmail.com) | Platform: perpdesk.xyz