

BITTENSOR SUBNET

QUANTA

A Self-Sustaining Portfolio-Based Alpha Signal Subnet

Decentralized Quantitative Intelligence for U.S. Equities

Built on Bittensor | dTAO Economics | Signal Pool Architecture | 12s Block Time

THE PROBLEM

Untapped Global Stock Intelligence

The U.S. stock market is a **\$45 trillion** arena with global interest, yet the infrastructure for discovering and rewarding genuine trading talent is fundamentally broken.

- Retail traders lack credible ways to prove skill
- Competitions reward luck and recklessness over consistency
- No trustless, verifiable track record system exists

74-89%

of retail traders lose money—yet the problem isn't lack of talent, it's lack of proper infrastructure



Risk Rewarded Over Skill

Most competitions reward maximum risk-taking, not skill. Winners are often lucky outliers, not consistent performers.



Gatekept Verification

Proving a track record requires expensive audits or platform lock-in. Self-reported returns are meaningless.



Geographic Barriers

Non-U.S. traders can't access legitimate competitions. Talent is excluded by jurisdiction, not ability.



No Skin in the Game

Paper trading competitions don't separate real conviction from noise. Cheap talk pollutes signal quality.

THE SOLUTION

QUANTA: Skill-to-Value Pipeline



Portfolio Signals

Submit weighted U.S. equity portfolios as JSON. No code, no complexity—just positions and conviction.



Risk-Adjusted Scoring

Multi-metric evaluation: Sharpe, Sortino, Calmar, max drawdown, originality. Consistency beats luck.



Stake-to-Play

Signal generators stake α -token ante. Real skin in the game separates signal from noise.



Meritocratic Rewards

Top performers earn emissions + redistributed ante. Bottom tier forfeits stake. Performance is the only currency.



Unlimited Access

Signal Pool architecture enables unlimited participants. No UID required to compete and earn.



On-Chain Verification

Immutable track records on Bittensor. Verifiable performance history that can't be faked.

PROVEN MODEL

The Numerai Precedent

\$550M

Assets Under Management

25%

2024 Net Returns

15,000+

Active Data Scientists

Numerai built a **\$550M hedge fund** powered entirely by crowdsourced predictions from anonymous data scientists worldwide. Their model proves that **aggregated signal from skilled participants** can generate institutional-grade alpha.

QUANTA applies this proven framework to **portfolio-based signals**—making participation accessible to traders without ML expertise.

✓ Crowdsourced Alpha Works

Aggregated signals outperform individual predictions

✓ Stake Creates Accountability

NMR staking separates signal from noise

✓ Global Talent Pool

15,000+ anonymous contributors worldwide

ARCHITECTURE INNOVATION

Solving the 256 UID Limit



The Challenge

Bittensor subnets are limited to **256 UIDs** (miners + validators combined). Traditional design caps participation at ~192 miners.

~192

Max Miner UIDs



Signal Pool Architecture

Decouple **signal submission** from **on-chain registration**. Anyone can submit; UIDs represent aggregators.

∞

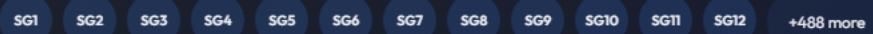
Unlimited Participants

| | | |
|----------------------------|------------------|-----------------------|
| Max Participants | ~192 | Unlimited |
| Registration | UID Required | Permissionless |
| Barrier to Entry | High (UID cost) | Low (stake only) |
| Track Record | UID holders only | All signal generators |
| Reward Distribution | Direct only | Direct + Pooled |

CORE INNOVATION

The Signal Pool Model

OFF-CHAIN: Signal Pool (Unlimited Capacity)



Anyone submits signals + stakes a-token. No UID needed. All track records stored.

↓ Top signals selected by Pool Operators ↓

ON-CHAIN: Bittensor Subnet (256 UIDs)

Solo Miners (~50)



Top performers with direct UIDs

Pool Operators (~100)



Aggregate signals from generators

Validators (~64)

Score & verify all signals

↓ Rewards flow back through pools ↓

Solo Miners



Pool Members



Pool Operators

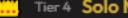


Losers



PROGRESSION SYSTEM

Participation Tiers

| | |
|--|-------------------------|
|  Tier 4 Solo Miner (UID) Requirements: 90-day track record, top 10%, UID registration Benefits: Direct on-chain rewards, no operator fee, full control | ~50 slots → Promote |
|  Tier 3 Pool Operator Requirements: UID registration, stake requirement, reputation Benefits: Earn fees from aggregating signals, build miner pools | ~100 slots → Promote |
|  Tier 2 Qualified Generator Requirements: 60-day track record, top 30% performance Benefits: Priority pool placement, reduced operator fees | Unlimited → Promote |
|  Tier 1 Signal Generator Requirements: Stake any ante amount, submit valid portfolio signal Benefits: Build track record, earn via pools, learn the game | Unlimited |

Meritocratic Progression

 **Quarterly Challenge:** Bottom 5% of UID holders face replacement by top-performing challengers

 **Performance-Based:** Track record determines promotion, not capital or connections

 **Multiple Paths:** Earn as a signal generator OR graduate to direct UID holder

 **Pool Incentives:** Operators compete to attract best generators with lower fees

PARTICIPANT ECOSYSTEM

Miner Taxonomy

From casual stock pickers to sophisticated ML pipelines—all welcome



Solo Miners

Direct UID holders (100% rewards)



Pool Operators

Aggregate signals, earn 10-20% fees



Specialists

Focused expertise areas

SUBMISSION INTERFACES



CLI

30 min



Web

5 min



Mobile

5 min



API

2-4 hrs



Spreadsheet

15 min



Social/Chat

5 min

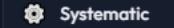


Solo Miners



Discretionary

+



Systematic

+



Hybrid

+

QUANTA VS NUMERAI

QUANTA

Portfolio weights (any method)

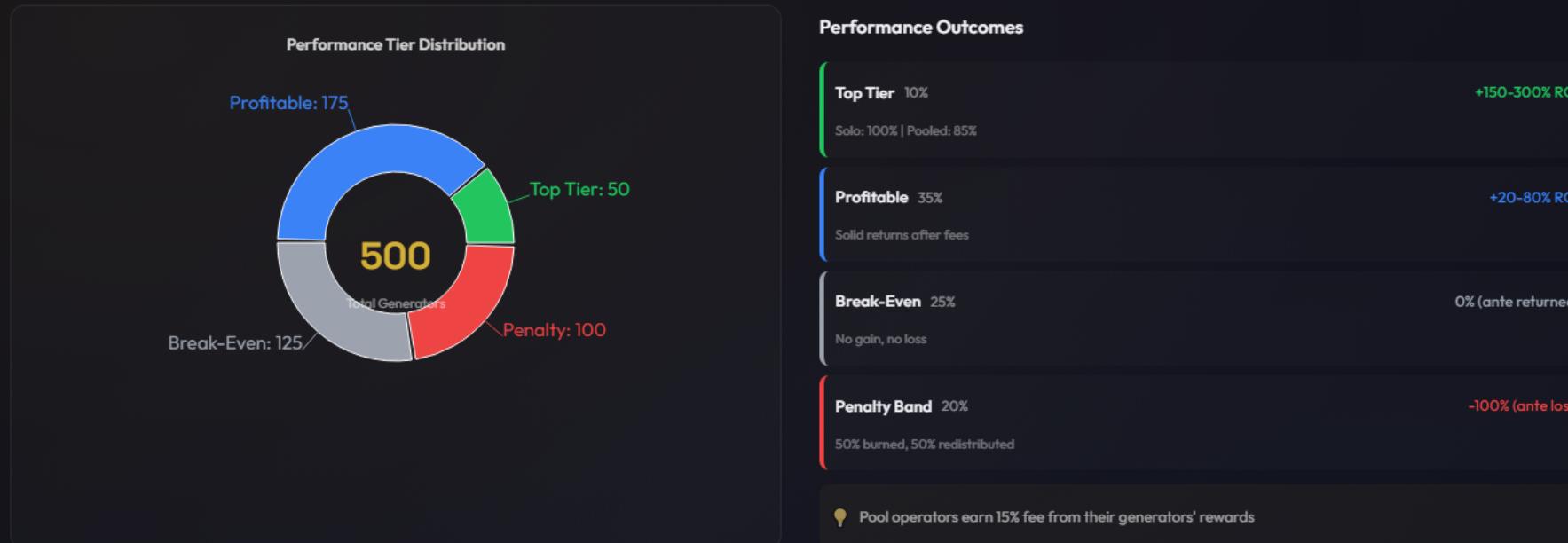
Numerai

ML predictions on obfuscated data

Key: "Can you pick good stocks?" not "Can you build ML models?"

ECONOMICS

Reward Distribution



PARTICIPATION FLOW

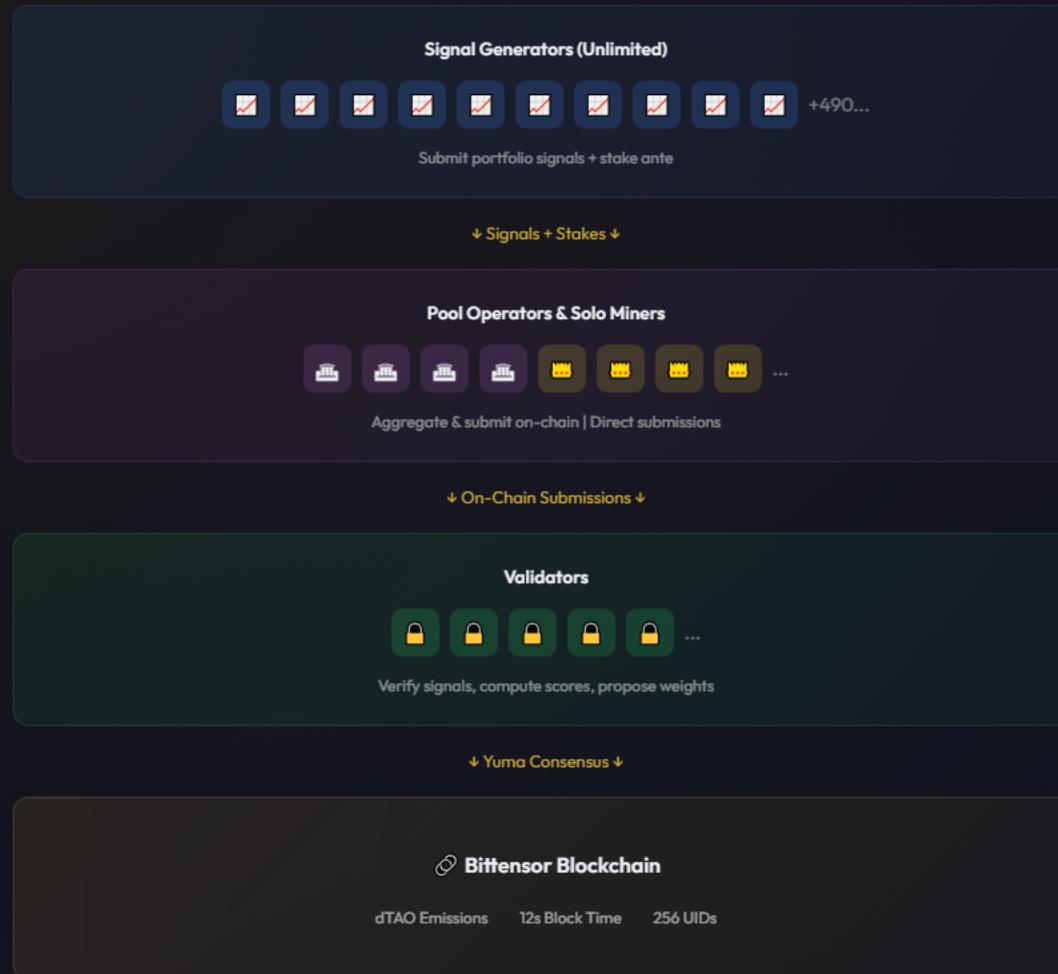
How QUANTA Works

**Continuous Competition**

Signals persist until updated. Churn penalties discourage excessive rebalancing. Long-term alpha rewarded.

NETWORK TOPOLOGY

Decentralized Architecture



TEMPORAL MECHANICS

Epoch Lifecycle

| 1-Hour Epochs | 1-Day Epochs | Continuous Eval | Distribution |
|---|---|------------------------------------|--------------------------------------|
| 24/day | Real-time | Real-time | Per epoch |
| High-frequency signal updates, rapid feedback | Daily aggregation, position persistence | Mark-to-market, Sharpe calculation | Proportional rewards, rolling payout |

Rolling Evaluation Windows

| 7 Days | 30 Days | 90 Days |
|---------------------|---------------------|-----------------------|
| 20% | 35% | 45% |
| Short-term momentum | Monthly consistency | Quarterly persistence |

PERFORMANCE EVALUATION

Composite Scoring System

Sharpe Ratio

40%

Primary: Risk-adjusted returns (industry standard)

$$(R - R_f) / \sigma$$

Total P/L %

20%

Absolute return performance

$$(V_a - V_o) / V_o$$

Max Drawdown

15%

Largest peak-to-trough decline

$$-\min((P - Peak) / Peak)$$

Sortino Ratio

10%

Downside-adjusted returns

$$(R - R_f) / \sigma_{\text{down}}$$

Calmar Ratio

10%

Return vs max drawdown

$$\text{CAGR} / \text{MaxDD}$$

Turnover

5%

Portfolio stability penalty

$$\sum |\Delta \text{weights}|$$

Composite Score Formula

$$\text{Score} = \sum (w_i \times \text{normalize}(metric_i))$$

All metrics normalized to [0, 1] range

Outlier capping at 3σ

Drawdown penalty >10%: -0.1 per 1%

Originality bonus for unique signals

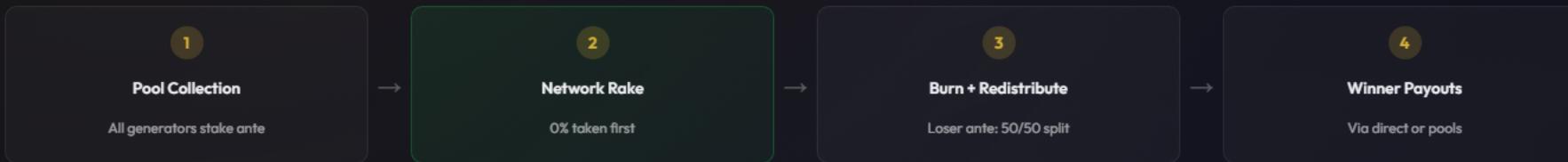
SPORTSBOOK ECONOMICS

Self-Sustaining Tokenomics



Guaranteed Network Sustainability

QUANTA *can* take an optional **rake from the pool** (0-8%, governance-tunable). With emissions and external revenue providing base sustainability, setting the rake to 0% is under consideration—allowing 100% of the ante pool to be redistributed to winning signal generators.



$$\text{Network Profit} = \text{Rake (guaranteed)} + \text{Emissions + Revenue (bonus)}$$

Network profit is **always positive** when participants > 0

DISTRIBUTION MECHANICS

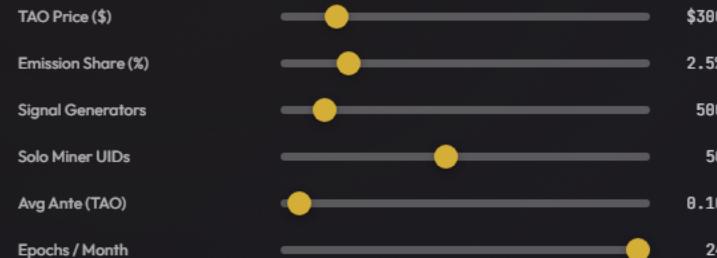
Power-Law Rewards



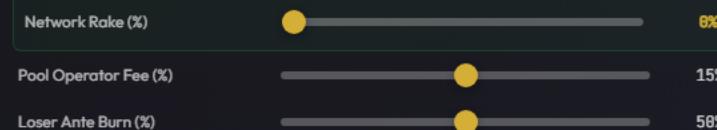
INTERACTIVE SIMULATOR

Self-Sustaining Economics Model

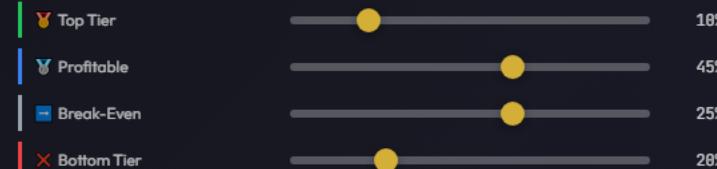
🌐 Network Parameters



💰 Economics

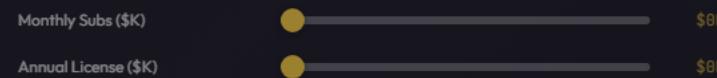


📊 Performance Tiers (100%)



🎁 Bonus Revenue (Optional)

NOT required for profitability



✅ Network Always Profitable

Rake taken first • Participants > 0 • Profit > 0

🔥 Epoch Pool (Per Epoch)

| | |
|----------------------|----------|
| Total Ante Collected | \$15,000 |
| Network Rake (0%) | -\$0 |
| Pool After Rake | \$15,000 |

🏆 Tier Distribution



🔥 Loser Ante Mechanics

| | |
|---------------------------------|---------|
| Ante Forfeited (100 generators) | \$3,000 |
| → Burned (50%) | \$1,500 |
| → To Winners (50%) | \$1,500 |

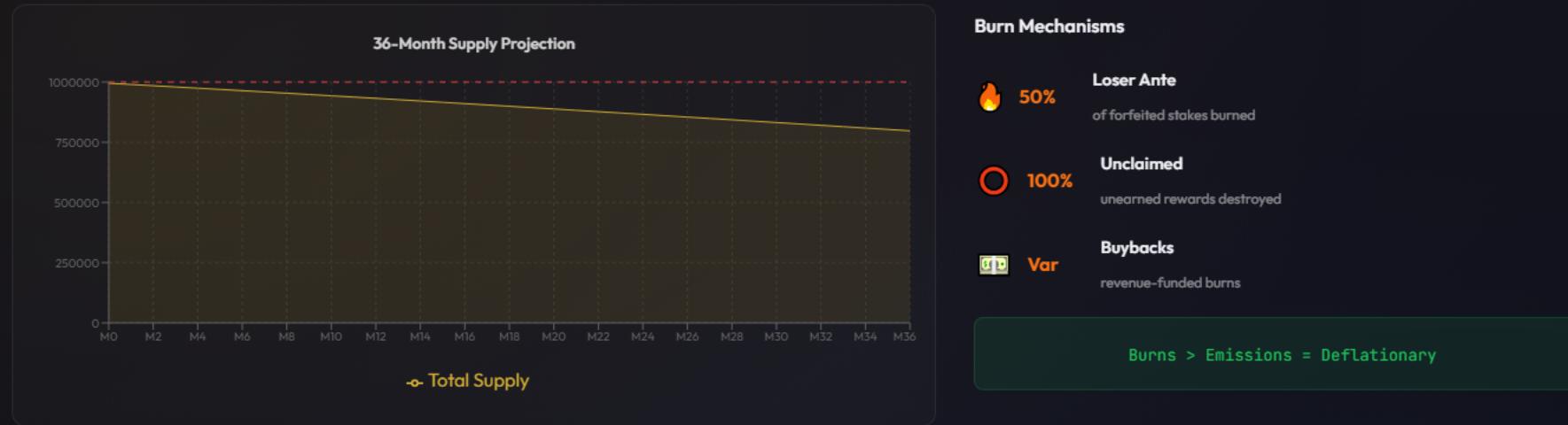
📊 Monthly Profit Breakdown

| | | | | | | | | | | | | | |
|--------------------|----------------|---|-------------------|---------------------------|---|-----------------|--------------|---|--------------|------------------------|---|-----------------------|--------------|
| Core Profit (Rake) | \$8 GUARANTEED | + | Bonus (Emissions) | \$291,600 18% Owner Share | + | Bonus (Revenue) | \$0 OPTIONAL | + | Value Burned | \$36,000 DEFILATIONARY | = | Total Value Generated | \$327,600/mo |
|--------------------|----------------|---|-------------------|---------------------------|---|-----------------|--------------|---|--------------|------------------------|---|-----------------------|--------------|

Scroll for more ↓

SUPPLY DYNAMICS

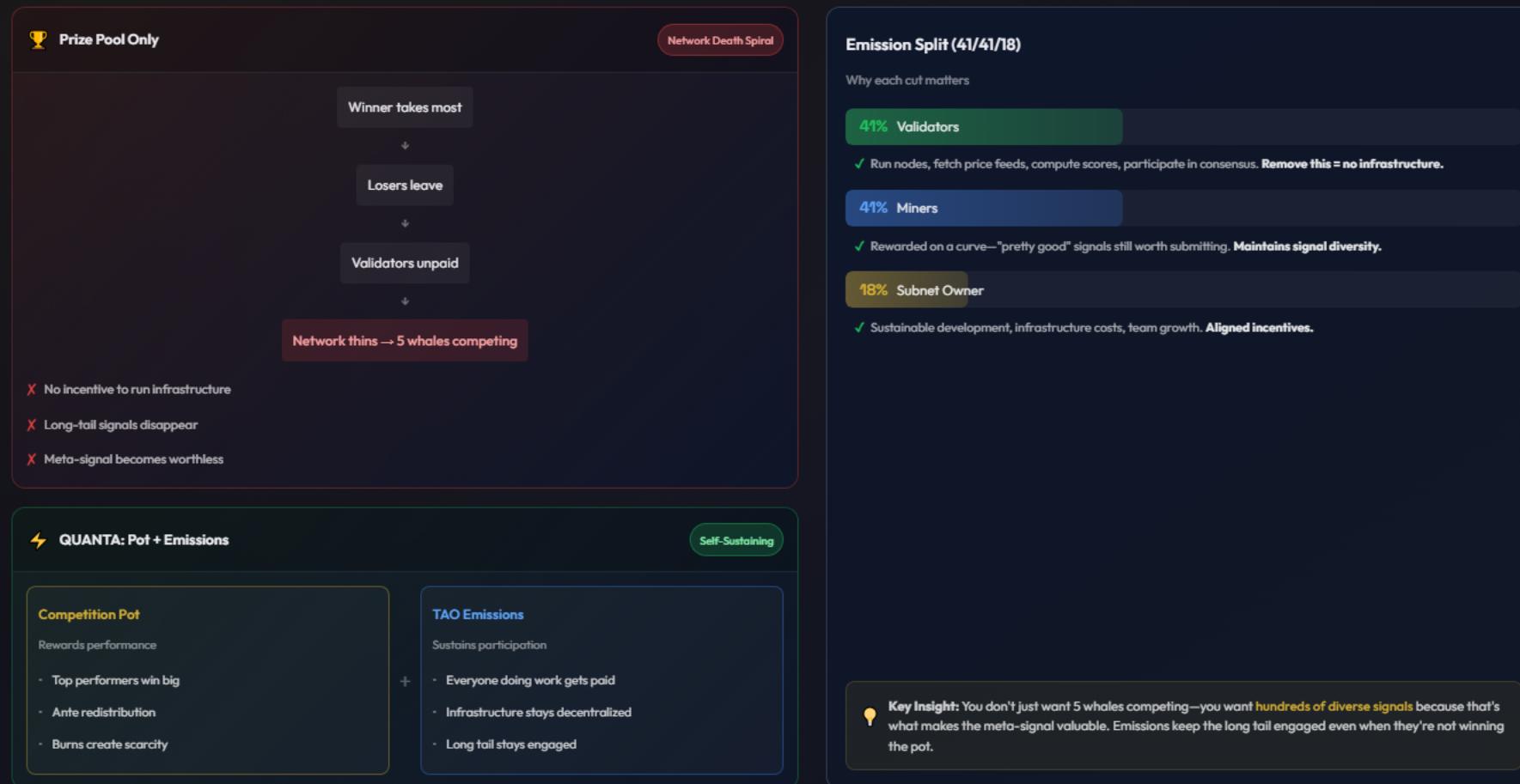
Deflationary Trajectory



WHY TWO LAYERS MATTER

Pot + Emissions = Network Depth

Prize pool rewards performance. Emissions sustain participation and infrastructure.



REGULATORY POSTURE

Compliance by Design

💡 Simulation-Only Architecture

QUANTA operates purely as a **paper-trading simulation**. No actual stock trades are executed on-chain. Generators submit signals—not trades. The network tracks hypothetical performance using real market data.

✓ No custody of assets

✓ No trade execution

✓ No securities issuance

✓ Signals ≠ Investment advice

⌚ Skill-Based Competition

Like fantasy sports or chess tournaments—outcomes determined by participant skill, not chance.

⚖️ Howey Test Analysis

Profits arise from participant's own analytical work, not from centralized management efforts.

📜 Favorable Precedent

SEC "Project Crypto" (Nov 2025): tokens can "mutate" from securities as networks decentralize.

Future Fund Structure: Any managed fund or advisory would operate under formal LP/GP structure with proper registration—separate from the subnet game.

BONUS REVENUE STREAMS

Additional Monetization

Network is profitable without these—pure bonus ↓

**Signals API**

Top portfolio compositions and real-time rankings

\$50K-\$250K/year

Hover to see details

**Education**

Courses, webinars, mentorship, certifications

Recurring revenue

Hover to see details

**SaaS Analytics**

Portfolio dashboards, backtesting, alerts

\$29-299/mo tiers

Hover to see details

**Tournaments**

Special events with sponsorships and entry fees

Seasonal events

Hover to see details

**Talent Scouting**

Verified track records for fund recruitment

\$100K-175K/hire

Hover to see details

**Strategy Licensing**

Package top strategies for institutions/ETFs

5-20 bps on AUM

Hover to see details

\$9.28B

Alternative Data Market (2024)

52.6%

CAGR to 2034

\$1.6M

Avg. Institutional Spend/Year

ECOSYSTEM GROWTH

Competitions & Community

Building talent pipelines and brand awareness

🏆 Biannual Championships

Major tournaments at regional, national, and international levels creating recurring engagement cycles.



High School & College

University partnerships, student clubs, academic credit integration



Regional Leagues

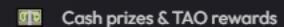
City and state-level competitions with local sponsorships



National/International

Grand championship events with major sponsors and media coverage

🎁 Rewards & Incentives



Cash prizes & TAO rewards



Coveted interviews at sponsored firms



Certifications & verified credentials



Exclusive badges & leaderboard recognition



Scholarships & educational grants

🤝 Sponsorship Opportunities

Premium brand placement for financial services, trading platforms, and fintech companies seeking access to engaged trading talent.

Title Sponsors

Prize Sponsors

Platform Partners

Media Partners

TECHNICAL ARCHITECTURE

System Design

Signal Pool

- Off-chain storage (IPFS/DB)
- Unlimited capacity
- Permissionless submission
- Track record storage
- Ante escrow contracts

Pool Operators

- Aggregate generator signals
- Hold on-chain UIDs
- Submit best signals
- Distribute rewards
- Earn operator fees

Solo Miners

- Direct UID holders
- Top performer graduates
- Submit own signals
- Full reward capture
- Premium status

Validators

- Fetch live market data
- Tiingo / Polygon APIs
- Mark portfolios to market
- Compute risk metrics
- Yuma consensus weights

Scoring Engine

- Rolling 7/30/90-day epochs
- Multi-metric composite
- Originality scoring
- Drawdown monitoring
- Power-law distribution

Security

- Commit-reveal protocol
- Sybil resistance (stake)
- Front-running prevention
- Collusion detection
- Plagiarism blacklist

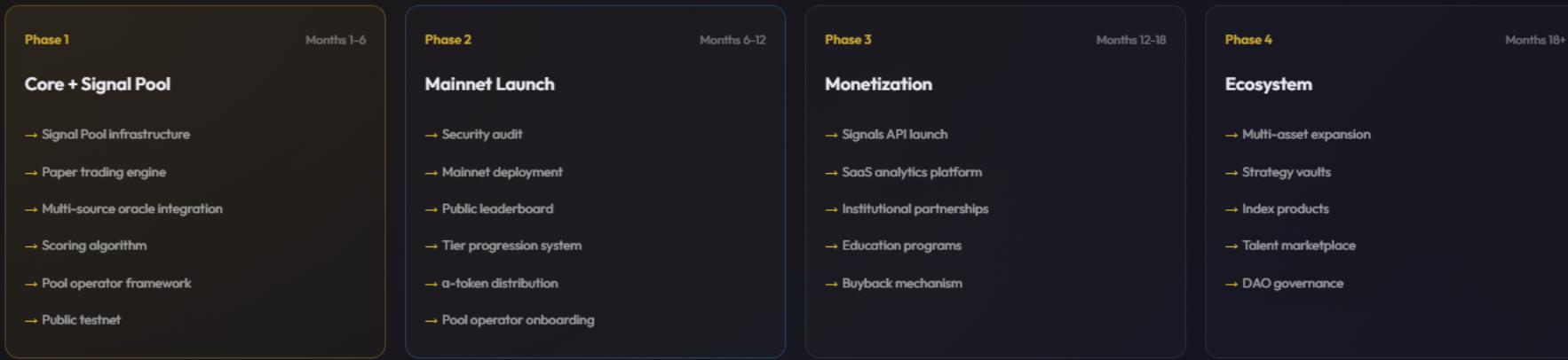
YUMA.AI ACCELERATOR

Financial Model



IMPLEMENTATION

Development Roadmap



THE VISION

QUANTA creates a self-sustaining network with unlimited participation where portfolio signals are evaluated objectively, rewarded meritocratically, and monetized transparently.



Unlimited Scale

Signal Pool breaks UID limits

Self-Sustaining

Profitable from day one

Deflationary

Burns exceed emissions

Multi-Path Rewards

Direct + Pooled earnings

Global Access

24/7 permissionless

[Interactive Litpaper](#)[Technical Spec \(v5\)](#)[Contact Us](#) [FAQ](#)

A sustainable network where every participant who generates real alpha wins.