

Quant Atlas

Nexus Use Cases

Institutional Workflows for Market Sentiment and Pressure Intelligence

Quant Atlas

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Abstract

This paper presents concrete institutional workflows for Nexus, the Quant Atlas multi asset sentiment and market pressure dataset. Nexus is framed around its target users, behavioral dimensions, signal interpretation, decision workflows, validation framework, coverage, integration patterns, and operational outcomes. The objective is to show how the dataset can be consumed by systematic research teams, portfolio managers, macro desks, risk functions, data buyers, broker platforms, and market intelligence providers without forcing a change in their existing investment process.

1 Executive Overview

Nexus converts observed price behavior into a regularly updated, timestamped measure of market sentiment, directional pressure, and behavioral state across global assets. The dataset combines momentum imbalance, range pressure, volatility pressure, persistence, distance from equilibrium, trend quality, and component agreement into a bounded score with directional events and confidence information.

The product is designed as a market state variable rather than a standalone trade instruction. It can support alpha feature engineering, timing overlays, regime and pressure filtering, exposure review, signal validation, cross asset screening, and client-facing market intelligence. Its institutional value comes from identifying market states where forward return behavior, swing-point proximity, and reaction profiles may differ from random timing and unconditional market behavior.

The default production delivery method is R2 object storage. S3, API, SFTP, email, workbook delivery, and other agreed delivery methods remain available according to the client's infrastructure and workflow requirements.

2 Nexus Use Cases

Product summary. Nexus is a regularly updated multi asset sentiment and market pressure dataset. It converts observed price behavior, momentum imbalance, volatility pressure, range behavior, persistence, distance from equilibrium, and trend quality into timestamped directional pressure events across global assets.

2.1 Target Users

- Systematic research teams seeking behavioral market state features.
- Multi asset portfolio managers needing a sentiment and pressure overlay across global markets.
- Macro desks monitoring market psychology, exhaustion, and reaction risk.
- Risk teams looking for independent pressure flags around crowded, stretched, or unstable market states.
- Data buyers evaluating regularly updated sentiment signals for alpha research, timing overlays, and model validation.
- Broker platforms and market intelligence providers seeking a structured sentiment layer for client dashboards and research products.

2.2 What Nexus Measures

Nexus is designed to quantify market sentiment through observed market behavior rather than survey responses or news interpretation. The methodology is based on the premise that market psychology leaves measurable traces in price action. A market that rises aggressively can become stretched. A market that sells off sharply can approach exhaustion. A market that appears range bound can still accumulate directional pressure beneath the surface.

Nexus translates those conditions into a bounded score and a set of directional sentiment events. The calculation is inspired by several independently motivated behavioral dimensions:

- **Momentum imbalance:** whether recent price movement reflects persistent directional pressure or a stretched condition.
- **Range pressure:** where the asset trades relative to recent high-low ranges and current bar structure.
- **Volatility pressure:** whether volatility expansion supports or destabilizes the current move.
- **Persistence and autocorrelation:** whether returns show continuation, instability, or directional fatigue.
- **Distance from equilibrium:** how far price has moved from smoothed reference levels after adjusting for volatility.
- **Trend quality:** whether directional movement is efficient or noisy.
- **Confidence:** the degree of agreement across the component structure.

The resulting Nexus score is intended to function as a market state variable. Its institutional value comes from identifying moments where market behavior may differ from random timing and from the unconditional

baseline.

2.3 Signal Interpretation

Nexus produces a sentiment and pressure score that can be converted into directional events. Low extreme readings indicate a negative pressure state where bullish reaction risk may be increasing. High extreme readings indicate a positive pressure state where bearish reaction risk may be increasing.

The signal can be configured in three primary ways:

- **Entry into an extreme state:** the event is generated when the Nexus score crosses into an overextended pressure zone.
- **Exit from an extreme state:** the event is generated when the Nexus score exits an oversold or overbought zone, indicating possible pressure release.
- **Continuous state:** the event remains active while the Nexus score stays inside the extreme zone.

Nexus identifies market states where the forward return distribution, swing-point proximity, and reaction profile may differ from normal market behavior. This makes the dataset suitable as a research feature, overlay, filter, monitoring input, or dashboard layer.

2.4 Use Case 1: Alpha Feature for Systematic Research

A systematic research team uses Nexus as an input feature within its internal model library. The team evaluates whether Nexus scores, confidence values, and signal states improve prediction, ranking, timing, or model conditioning.

Workflow.

1. The research team ingests historical Nexus data across the selected universe.
2. Nexus score, signal direction, pressure state, and confidence values are added to the firm's feature library.
3. Candidate strategies are tested with and without Nexus features.
4. The team evaluates whether Nexus improves forward return behavior, hit ratio, regime classification, or signal stability.
5. Features that provide incremental value are retained in the production research pipeline.

Operational outcome. Nexus becomes a reusable behavioral feature set. The research team can test whether market sentiment, pressure, and confidence states improve existing models without treating the dataset as a standalone strategy.

2.5 Use Case 2: Timing Overlay for Existing Investment Views

A portfolio manager already has a fundamental, macro, statistical, or discretionary view on an asset. Nexus is used as a timing overlay to determine whether the current market state supports immediate execution, reduced sizing, delayed entry, or closer risk monitoring.

Workflow.

1. The portfolio manager forms an investment view independently of Nexus.
2. Nexus is checked for the relevant asset, horizon, and confidence state.
3. If the view aligns with a high confidence Nexus event, the manager can consider normal or increased sizing.
4. If Nexus is neutral, the manager may wait for stronger confirmation.
5. If Nexus strongly opposes the view, the manager may reduce size, delay entry, or require additional confirmation.

Operational outcome. The manager adds a systematic behavioral layer to the investment process without replacing the original thesis.

2.6 Use Case 3: Regime and Pressure Filtering

A strategy may perform differently when markets are neutral, stretched, exhausted, volatile, or unstable. Nexus can be used as a regime filter to determine when a strategy should be active, reduced, or monitored more closely.

Workflow.

1. The client classifies historical periods using Nexus scores, pressure events, and confidence states.
2. Existing strategy performance is evaluated inside and outside Nexus-defined regimes.
3. The client identifies whether the strategy performs better in neutral, extreme, recovery, or pressure-release conditions.
4. Production exposure is adjusted according to the preferred regime profile.

Operational outcome. The client gains a market state filter that can improve strategy selection, exposure

control, and model deployment timing.

2.7 Use Case 4: Risk Monitoring and Exposure Review

A risk team uses Nexus as an independent market pressure reference across the firm's active positions and watchlist. The dataset can flag positions exposed to sentiment reversal, exhaustion, or unstable market pressure.

Workflow.

1. The risk dashboard ingests Nexus data across the firm's active holdings and monitored instruments.
2. Positions are mapped against Nexus direction, confidence, and pressure state.
3. Large positions that conflict with high confidence Nexus events are flagged for review.
4. The risk team assesses whether the exposure is intentional, hedged, or vulnerable to reaction risk.
5. The review is logged for desk dialogue or risk committee discussion.

Operational outcome. Nexus provides a structured pressure input for risk discussions, making exposure review less dependent on narrative interpretation.

2.8 Use Case 5: Signal Validation and Model Comparison

Clients can use Nexus as a benchmark for evaluating internal signals. If an internal model performs better when aligned with Nexus, this may suggest that Nexus captures a useful behavioral state. If performance deteriorates when Nexus is opposed, the dataset may help identify weak trade contexts.

Workflow.

1. The client maps internal signals against Nexus event states.
2. Internal signal performance is segmented by Nexus alignment, opposition, and neutrality.
3. The client evaluates whether Nexus improves hit ratio, average return, signal stability, or adverse move behavior.
4. The internal model is adjusted to incorporate Nexus as a filter, overlay, or conditioning variable.

Operational outcome. Nexus helps clients determine whether their own signals perform better in specific sentiment and pressure states.

2.9 Use Case 6: Cross Asset Market Intelligence

A multi asset desk wants to monitor where behavioral pressure is concentrated across the global market universe. Nexus ranks and flags assets based on pressure state, signal direction, confidence, and recent event activity.

Workflow.

1. The client receives regular Nexus updates across the selected universe.
2. Assets are ranked by Nexus score, signal direction, confidence, and recent event activity.
3. The team reviews pressure clusters across regions, sectors, macro assets, currencies, commodities, or cryptocurrency assets.
4. Selected instruments are escalated to deeper fundamental, macro, or quantitative review.

Operational outcome. Nexus acts as a systematic idea generation and monitoring layer across global markets.

2.10 Use Case 7: Broker and Research Platform Integration

Broker platforms, data vendors, and market intelligence providers can use Nexus to enrich client-facing dashboards and research products with a regularly updated sentiment and pressure layer.

Workflow.

1. Nexus outputs are delivered through CSV, JSON, API, object storage, or workbook format.
2. The platform maps Nexus events to supported instruments.
3. Client-facing dashboards display market pressure states, sentiment events, confidence readings, and selected validation context.
4. Research teams use Nexus to support daily, weekly, or thematic market commentary.

Operational outcome. The platform receives a structured sentiment layer that can support market dashboards, research products, and client engagement without building the signal engine internally.

2.11 Validation Framework

Nexus is evaluated as an event study rather than only as a strategy backtest. The principal question is whether Nexus events identify market states with measurable forward behavior.

The validation framework can include:

- **Forward return analysis:** direction-adjusted return after each Nexus event across multiple horizons.
- **Hit ratio:** percentage of events with positive direction-adjusted forward returns.
- **Random benchmark comparison:** performance compared with random event bars using the same event count and directional mix.
- **All-bar baseline comparison:** performance compared with unconditional market behavior across all eligible bars.
- **Extrema Precision Index:** percentage of bullish events appearing near local lows and bearish events appearing near local highs.
- **Signal decay:** how the signal behaves across short, medium, and longer horizons.
- **Confidence lift:** whether confidence-filtered events outperform the broader signal population.
- **Yearly stability:** whether the signal remains useful across time.
- **Bullish and bearish symmetry:** whether the signal works on both sides of the market.
- **Signal density:** whether the dataset generates enough events to be useful for institutional research.

2.12 Universe and Coverage

Nexus is designed for global asset coverage, subject to source availability, data quality, and client requirements. The standard coverage universe can include:

- Public equities.
- ETFs and indices.
- FX pairs.
- Commodities and commodity-linked instruments.
- Cryptocurrency assets.
- Selected rates, fixed income proxies, and credit ETFs.

Coverage can be configured by asset class, region, sector, instrument list, exchange, or client-provided universe. The same methodology can be applied across a focused asset class package or a broader multi asset universe.

2.13 Integration Patterns

- **Cadence:** Hourly or daily updates, depending on the selected asset universe and client workflow.
- **Default delivery:** R2 object storage for regular production files.
- **Alternative delivery:** S3, API, SFTP, email, workbook, and other agreed methods are available according to the client workflow.
- **Research outputs:** Validation workbook, signal event table, random baseline, all-bar baseline, EPI, lift, confidence lift, signal density, and yearly stability.
- **Universe customization:** Clients can define the asset universe. Coverage scales according to the number of instruments, update frequency, and identifier mapping requirements.

2.14 Why Nexus

- Converts observed price behavior into a systematic sentiment and market pressure dataset.
- Measures behavioral states through momentum, range behavior, volatility pressure, persistence, equilibrium distance, trend quality, and confidence.
- Supports multiple institutional workflows without requiring clients to trade the signal directly.
- Can be used as an alpha feature, timing overlay, risk input, regime filter, model validation layer, or cross asset dashboard feed.
- Includes benchmark-aware validation against random event timing and unconditional market behavior.
- Provides multi-horizon analysis, allowing clients to understand whether the signal is short-lived, persistent, or horizon-dependent.
- Delivers a regularly updated and ticker-mapped structured dataset suitable for institutional research workflows.

3 Conclusion

Nexus is designed to fit into institutional workflows without requiring systematic researchers, portfolio managers, macro desks, risk functions, or distribution platforms to abandon their existing models and decision processes. It can be consumed as a behavioral feature set, timing overlay, regime filter, exposure review input, signal validation reference, cross asset screening feed, or client-facing market intelligence layer.

Its role is to quantify sentiment, directional pressure, and behavioral state through observable price dynamics using timestamped and auditable outputs. Each workflow can be logged, attributed, and evaluated against the consuming firm's own process, preserving operational accountability from research through production use.

This document is intended for institutional product evaluation and research workflow discussion. It does not constitute investment advice or a recommendation to trade any financial instrument.