Quant Atlas

Product Use Cases

Institutional Workflows for Nexus, Vertex, BoundaryAtlas, VisionFX, NeosFX, and PulseAtlas

Quant Atlas

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Abstract

This paper presents concrete institutional workflows for six Quant Atlas data products: Nexus, Vertex, BoundaryAtlas, VisionFX, NeosFX, and PulseAtlas. Each product is framed around its target users, decision workflow, integration pattern, and operational outcome. The objective is to show how each dataset can be consumed by systematic desks, discretionary portfolio managers, macro pods, allocators, data buyers, broker platforms, and risk teams without forcing a change in their existing investment process.

1 Executive Overview

Quant Atlas provides systematic market intelligence datasets designed for institutional research and trading workflows. The products are intentionally complementary. Nexus focuses on multi asset sentiment, pressure, and behavioral state detection; Vertex focuses on causal local and structural reversal location detection; BoundaryAtlas focuses on cross asset price structure and zone based decision support; VisionFX focuses on short horizon FX direction; NeosFX focuses on slower FX positioning; and PulseAtlas focuses on multi asset volatility expansion and contraction forecasting.

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.

Product	Signal family	Cadence and coverage	Primary institutional use
Nexus	Multi asset sentiment and market pressure signal	Hourly or daily updates across configurable global asset universes	Market sentiment measurement, pressure detection, alpha features, regime filters, timing overlays, and cross asset intelligence
Vertex	Local and structural reversal location signal	Regular point-in-time reversal scores and triggered signals across selected global macro assets	Reversal feature engineering, directional confirmation, exit and exposure review, cross-sectional screening, and signal validation
BoundaryAtlas	Zone based multi asset structural signal	Hourly, daily, weekly, and monthly streams across equities, FX, EM FX, commodities, and indices	Support and resistance mapping, stop and target placement, cross asset screening, and breach risk monitoring
VisionFX	Composite short horizon directional FX signal package	Hourly signals across G10 majors	Intraday FX timing, alpha overlays, discretionary confirmation, and risk monitoring
NeosFX	Composite directional FX signal package calibrated to slower horizons	Daily signals across G10 majors	Medium horizon macro FX positioning, allocator overlays, and end of day risk reporting
PulseAtlas	Volatility expansion and contraction forecast	Regular timestamped forecasts across selected global assets, typically evaluated over a 20 timestep horizon	Volatility forecasting, ATR based risk sizing, options desk workflows, execution planning, and portfolio risk construction

Table 1: High level positioning of the six Quant Atlas products.

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 product 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 underneath 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 not intended to be interpreted as a standalone trade instruction. It is 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 Nexus suitable as a research feature, overlay, filter, monitoring input, or dashboard layer, rather than only as a direct buy or sell signal.

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 does not need to trade Nexus directly. Instead, it 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 product 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 product 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 product 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 crypto 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, AWS, 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 key 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 product 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 index.

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 use cases without forcing 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 Vertex Use Cases

Product summary. Vertex is a systematic reversal detection dataset that quantifies when price action is forming a genuine local or structural turning point after reaching abnormal, overextended states. It produces calibrated bullish and bearish reversal probabilities, directional signals, reversal scale, and conviction using only information available at each timestamp.

3.1 Target Users

- Systematic research and machine learning teams seeking an orthogonal, point-in-time reversal feature.
- Portfolio managers and traders requiring confirmation that an existing directional view is entering near a probable local or structural turn.
- Risk teams monitoring turning point exposure across active positions.
- Cross asset researchers screening instruments by local and structural reversal conviction.
- Volatility and regime modeling teams seeking non-redundant exhaustion information.
- Model validation teams benchmarking internal signals against independently validated turning point events.

3.2 What Vertex Measures

Vertex measures whether price behavior is forming a bullish reversal, associated with a developing trough or bottom, or a bearish reversal, associated with a developing peak or top. The product operates at two scales: local for tactical turning points and structural for broader reversals.

Each per-bar value carries four core fields:

- **Reversal score:** a calibrated probability associated with the relevant bullish or bearish reversal state.
- **Signal direction:** bullish or bearish.
- **Reversal scale:** local or structural.
- **Conviction:** the confidence assigned to the reversal value or triggered signal.

The score is built point in time from structured price behavior. Its components reflect multi scale price extension, trend efficiency decay, volatility transition, range re-entry, persistence, and distance from equilibrium. Discrete causal signals are triggered only when conviction, confirmation, and structural state align.

3.3 Signal Interpretation and Boundaries

Vertex is a reversal location overlay and machine learning feature. It is not a standalone trading strategy or standalone alpha source, and it is not a volatility or move size timer. Its purpose is to identify where a local or structural turn is forming so that the consuming firm can combine that information with its own directional, risk, execution, or portfolio process.

Signal timing is coincident to slightly lagging, typically within one bar of the turn. The directional edge is best in class among the standard indicators used in the stated benchmark, but modest in absolute terms. Vertex is therefore positioned as a diversifying input that is strongest in combination with other features, rather than as a high signal standalone forecaster.

3.4 Use Case 1: Machine Learning Reversal Feature

A systematic research team adds Vertex to the firm's feature library as an orthogonal, point-in-time directional turning point input.

Workflow.

1. The research team ingests historical Vertex values and triggered signals across the selected universe.
2. Reversal score, signal direction, reversal scale, and conviction are added to the internal feature library.
3. Candidate models are evaluated with and without the Vertex fields.
4. The team measures incremental information content and orthogonality against standard momentum and mean reversion factors.
5. Vertex is retained where it improves model diversification, turning point awareness, or conditional performance.

Operational outcome. Vertex becomes a non-redundant reversal feature that can diversify internal models without being treated as a standalone alpha source.

3.5 Use Case 2: Reversal Confirmation Overlay

A portfolio manager has an existing directional view and uses Vertex to assess whether the intended entry is occurring near a probable local or structural turn rather than directly against one.

Workflow.

1. The directional thesis is formed independently of Vertex.
2. The manager checks the latest Vertex direction, scale, score, and conviction for the relevant asset.
3. Alignment with a probable turn supports confirmation of the proposed entry context.

4. Opposition from a high conviction local or structural reversal prompts additional review, delayed entry, or reduced exposure.

5. The decision is logged so that the effect of Vertex alignment, opposition, or neutrality can be evaluated later.

Operational outcome. The manager receives a systematic turning point reference that can improve entry context without replacing the original investment thesis.

3.6 Use Case 3: Exit and Exposure Management

A risk team or portfolio manager maps active positions to Vertex direction, reversal scale, and conviction to identify turning point risk and support exposure decisions.

Workflow.

1. Active positions are matched to the latest Vertex values and signals.

2. A bullish position facing a bearish reversal signal, or a bearish position facing a bullish reversal signal, is flagged for review.

3. Local signals support tactical profit taking or stop review, while structural signals support broader exposure reassessment.

4. Conviction is used to prioritize which positions require immediate attention.

5. The desk records whether it maintained, reduced, exited, or otherwise adjusted the position.

Operational outcome. Vertex creates a structured turning point risk layer for profit taking, stop review, and de-risking decisions.

3.7 Use Case 4: Cross Sectional Reversal Screening

A multi asset team uses Vertex to identify where probable local or structural reversals are concentrated across the selected universe.

Workflow.

1. The latest Vertex stream is ingested across selected global macro assets.

2. Assets are ranked by bullish or bearish reversal conviction at the local and structural scales.

3. The team reviews the highest ranked turning point candidates.

4. Selected assets are escalated to the firm's deeper fundamental, macro, technical, or quantitative process.

5. Subsequent outcomes are evaluated against the original Vertex score, scale, direction, and conviction.

Operational outcome. The team receives a reproducible cross sectional screening process for probable local and structural turning points.

3.8 Use Case 5: Volatility and Regime Aware Modeling

A research team uses Vertex as a secondary, orthogonal input in volatility and regime aware models. The objective is to capture exhaustion information that remains largely independent of a realized volatility factor model.

Workflow.

1. Vertex reversal values are aligned with the firm's existing volatility or regime features.
2. The research team tests whether Vertex adds non-redundant information about exhaustion and forward move magnitude.
3. Model performance is segmented by Vertex direction, scale, conviction, and alignment with the firm's existing regime state.
4. Vertex is retained as an auxiliary feature where it improves conditional modeling without being used as a volatility timer.

Operational outcome. Vertex contributes secondary exhaustion information to volatility and regime aware models while preserving the boundary that it is not a direct move size or volatility timing forecast.

3.9 Use Case 6: Signal Validation and Benchmarking

A research or validation team segments internal signal performance by alignment, opposition, or neutrality relative to Vertex turning point events.

Workflow.

1. Internal signals are mapped to contemporaneous Vertex values and triggered events.
2. Performance is segmented by Vertex alignment, opposition, neutrality, scale, and conviction.
3. The team compares internal outcomes around Vertex identified extrema with random timing, random direction, and constant or all bar baselines.
4. The review measures whether Vertex helps identify stronger or weaker contexts for the internal signal.
5. Findings are incorporated into model documentation, filters, or research priorities.

Operational outcome. Vertex provides an EPI validated turning point benchmark for testing whether internal signals behave differently near probable local and structural reversals.

3.10 Validation Framework

Vertex is evaluated as a reversal location dataset. The principal question is whether its signals coincide with realized tops and bottoms more precisely and consistently than relevant null and baseline comparisons.

The validation framework includes:

- **Extrema Precision Index:** EPI with precision, recall, and F1 for coincidence with realized extrema.
- **Actionable and timeliness adjusted EPI:** evaluation that accounts for usability and the timing relationship between signal and turn.
- **Extrema coverage and timing profiles:** coverage, lead time, and timing error distributions.
- **Baseline comparisons:** random timing, random direction, and constant or all bar baselines.
- **Empirical significance:** coincidence p-values from the validation process.
- **Lift analysis:** precision lift, actionable lift, and conviction lift.
- **Information content:** information coefficient and orthogonality versus standard factors.
- **Horizon and decay:** behavior across forecast horizons and signal decay profiles.
- **Chronological stability:** stability across the test sample.
- **Ranking and calibration:** average precision, ROC AUC, and Brier score.

Across the stated 60 instrument validation universe, covering FX majors and crosses together with equities spanning every sector, overall EPI coincidence was statistically significant at the simulation floor with $p < 0.05$ on 60 of 60 instruments. The structural layer was significant on 59 of 60 instruments. Precision lift ranged from 2.2x to 4.5x over the random timing null.

The methodology is strictly point in time and causal. Every signal uses only information available at its timestamp, verified through an independent bar by bar replay. Validation is out of sample with purge and embargo and contains no look-ahead.

In benchmark testing against approximately 22 standard indicators, Vertex was the strongest single directional reversal feature among the tested mean reversion, momentum, and random alternatives. It was approximately 70% orthogonal to standard momentum and mean reversion factors. The product also carried secondary forward move magnitude information that remained largely independent of a realized volatility factor model.

Vertex beat its stated benchmarks and passed all stress tests included in the supplied validation framework.

3.11 Universe and Coverage

Vertex is delivered as a regular stream of reversal scores and triggered signals on selected assets from the global macro universe. Each value carries calibrated conviction.

The stated validation universe contains 60 instruments comprising FX majors and crosses together with equities spanning every sector. The product supports both local and structural reversal analysis within the delivered asset set.

3.12 Integration Patterns

- **Default delivery:** R2 object storage for the regular stream of reversal scores and the discrete signals they trigger.
- **Alternative delivery:** S3, API, SFTP, cloud storage, and other agreed methods are available according to the client workflow.
- **Core fields:** Reversal score, signal direction, reversal scale, and conviction.
- **Scale structure:** Separate local and structural reversal probabilities and signals.
- **Point in time construction:** Values generated using information available at each timestamp.
- **Signal triggering:** Discrete causal events generated when conviction, confirmation, and structural state align.

3.13 Why Vertex

- Detects probable local and structural reversal locations after abnormal, overextended price states.
- Uses structured price behavior and is strictly point in time and causal.
- Produces calibrated bullish and bearish reversal probabilities with direction, scale, and conviction.
- Demonstrates statistically significant EPI coincidence across the stated 60 instrument validation universe.
- Beat its stated benchmarks and passed all stress tests included in the supplied validation framework.
- Provides precision lift of 2.2x to 4.5x over the random timing null in the stated validation.
- Acts as an approximately 70% orthogonal input relative to standard momentum and mean reversion factors.
- Adds secondary exhaustion information that remains largely independent of a realized volatility factor model.
- Is explicitly positioned as a reversal location overlay and diversifying model feature, not as standalone alpha and not as a volatility or move size timer.

4 BoundaryAtlas Use Cases

Product summary. BoundaryAtlas is a multi horizon, multi asset, zone based directional signal. It identifies high stability price boundaries through volatility anchored construction and confluence clustering. Each signal carries zone geometry, conviction tier, and breach probability.

4.1 Target Users

- Systematic technical desks integrating zone based decision logic.
- Discretionary traders and portfolio managers needing rule based support and resistance references.
- Risk teams setting stop and take profit levels for desk positions.
- Multi asset macro funds using technical confluence as one input to thematic decisions.
- CTA desks operating breakout strategies that require programmatic boundary identification.

4.2 Use Case 1: Programmatic Stop and Take Profit Placement

A systematic equity or futures desk needs stop loss and take profit levels derived from market structure rather than arbitrary percentage offsets. BoundaryAtlas zones provide those levels.

Workflow.

1. The desk opens a position based on its own model.
2. BoundaryAtlas provides the active zones around current price for that instrument.
3. The stop is placed at the next zone opposite the trade direction, which represents the boundary that would invalidate the move.
4. The take profit is set at the next zone in the trade direction.
5. As price moves and new zones become active, stops can trail to preserve realized gains.
6. Every stop and target placement is auditable after the trade because the zone geometry that generated the level is logged with the trade.

Operational outcome. Stop and target placement is grounded in market structure with a fully auditable decision trail per trade. The process reduces operator subjectivity around level choice.

4.3 Use Case 2: Zone Confluence as a Trade Filter

A discretionary trader executes positions only when the thesis aligns with strong BoundaryAtlas zones, meaning zones with high confluence count.

Workflow.

1. The trader identifies a trade idea, such as long SPX on macro conviction.
2. BoundaryAtlas exposes the nearest support and resistance zones, including conviction tier and confluence count.
3. The trade is entered with a stop placed just beyond the nearest strong support zone.
4. If the zone breaches, the thesis is invalidated and the trade exits.
5. If price holds, the trade is allowed to run to the next BoundaryAtlas resistance zone.
6. Strong zones gate the trade, while trades at weak zones are skipped.

Operational outcome. The trader executes a smaller, more selective set of positions whose risk parameters are defined before entry.

4.4 Use Case 3: Multi Horizon Regime Context for Thematic Trades

A macro fund makes a three month thematic trade. BoundaryAtlas monthly and weekly horizons provide structural context, while the daily and hourly horizons provide execution timing.

Workflow.

1. The macro thesis is formed on an instrument, such as a multi year breakout candidate.
2. Monthly BoundaryAtlas highlights the structural resistance and support zones that define the thematic level.
3. Weekly BoundaryAtlas reveals intermediate consolidation ranges within the structural levels.
4. Daily and hourly BoundaryAtlas are used to time the entry, such as long signals at strong daily zone touches within the weekly consolidation.
5. The position is held with stops set by monthly zones, while position scaling is driven by daily zone interactions.

Operational outcome. The fund receives a unified zone framework across the macro horizon and the execution horizon. The same engine drives all four cadences, reducing the cognitive switching cost of using one tool for context and another for timing.

4.5 Use Case 4: Cross Asset Technical Screening

A multi asset desk wants a daily input on which instruments are at major structural levels. BoundaryAtlas provides the screening filter.

Workflow.

1. The daily feed ingests BoundaryAtlas signals across the configured universe: equities, FX, commodities, and indices.
2. The screening dashboard surfaces instruments where current price is at or near a strong zone, such as high confluence support or resistance.

3. The portfolio manager reviews the shortlist each morning to identify what is structurally interesting.
4. Conviction tier filters the list to a manageable size.
5. Selected instruments are escalated to the desk's deeper research process.

Operational outcome. The desk receives a daily idea generation funnel grounded in price structure across the full asset universe. This replaces ad hoc manual chart browsing with a systematic, reproducible filter.

4.6 Use Case 5: Breach Rate Monitoring for Risk Management

A risk team wants to monitor which positions have approached or breached structurally important levels. BoundaryAtlas breach probability data feeds the alert system.

Workflow.

1. BoundaryAtlas signals include `breach_probability` per active zone.
2. The risk system maps firm positions to BoundaryAtlas zones for each held instrument.
3. As price approaches a zone with significant residual size, breach probability is computed in real time.
4. Threshold crossings, defined by position size multiplied by breach probability, trigger desk notification.
5. The desk decides whether to hold, hedge, or close.

Operational outcome. The product creates a structured risk monitoring layer that converts approach to level into an actionable alert before the level is hit.

4.7 Use Case 6: Backtest Variable Enrichment for Technical Strategies

A research team developing technical strategies, such as mean reversion or breakout models, uses BoundaryAtlas zones as features in candidate models.

Workflow.

1. The research notebook ingests the BoundaryAtlas historical archive.
2. Strategies are tested with features such as distance to nearest strong support zone, confluence count at current zone, and breach rate of zone touched on a prior bar.
3. Features that improve model fit on the development window are retained.
4. Features that do not improve the model are discarded.
5. New strategies use BoundaryAtlas as a feature input rather than rebuilding zone detection internally.

Operational outcome. The research team receives a pre built technical feature library as a research input, reducing the engineering cost of building zone detection in house.

4.8 Integration Patterns

- **Multi stream delivery:** Each horizon, including H1, D1, W1, and M1, is a separate stream. Consumers subscribe only to the horizons they need.
- **Default delivery:** R2 object storage, with a separate stream for each selected horizon.
- **Alternative delivery:** S3 with SNS notification, API, SFTP, and other agreed methods are available according to the client workflow.
- **Universe customization:** Subscribers configure their asset universe. Pricing scales according to the selected coverage.

4.9 Why BoundaryAtlas

- Zone based architecture is structurally distinct from composite indicator signal products.
- Confluence based quality scoring recognizes zones only when multiple independent stability conditions agree.
- The confluence engine produces both conviction tier and breach probability prior.
- Multi horizon and multi asset coverage is delivered under one methodology, from hourly equity scans to monthly commodity zones.
- Each signal payload exposes zone geometry, including upper bound, lower bound, width, confluence source count, breach probability, and hold time statistics.
- Falsification grade validation uses the same pre committed verdict framework as VisionFX and NeosFX, calibrated per asset class.

5 VisionFX Use Cases

Product summary. VisionFX is an hourly directional FX signal package covering G10 majors. It uses a composite multi block score and point in time construction. The full signal stream is intended to be consumed as one package. Conviction labeling is retained as risk metadata and is not used to select only a subset of signals.

5.1 Target Users

- Systematic FX desks running intraday or short horizon swing strategies.
- Quant macro pods needing an external timing overlay on existing directional views.
- Multi strategy funds blending external signals into proprietary ensembles.
- Risk teams cross referencing internal FX exposure against an independent signal source.

5.2 Use Case 1: Alpha Overlay on an Existing Systematic FX Book

A systematic FX desk runs a proprietary trend following or carry strategy. VisionFX is consumed as a complete short horizon directional package alongside the desk's own model.

Workflow.

1. The desk receives the complete VisionFX hourly signal stream.
2. Every valid signal is retained under the package rules rather than filtered by conviction tier.
3. The desk compares VisionFX direction with its own house view for attribution, reconciliation, and portfolio context.
4. Agreement and disagreement are logged without removing signals from the delivered package.
5. Conviction labeling is used only as risk metadata for exposure review, risk limits, stop calibration, and monitoring.
6. The desk measures the contribution of the complete package against the house model over time.

Operational outcome. The workflow preserves the integrity of the complete VisionFX signal package while producing an explicit attribution and risk review trail.

5.3 Use Case 2: Independent Screening for Discretionary FX Trading

A discretionary FX desk wants a systematic reference before sizing into a trade. VisionFX is reviewed as a complete stream rather than through selective use of preferred conviction tiers.

Workflow.

1. The trader develops an intraday thesis on a G10 major.

2. Before entering, the trader checks the latest VisionFX direction and supporting package fields.
3. The desk records whether the house thesis aligns with, opposes, or is neutral to the delivered signal.
4. The full signal stream remains part of the review process; signals are not discarded because of their conviction label.
5. Conviction is used only to frame risk, exposure, stop placement, and escalation requirements.
6. The desk reviews the complete alignment and override log monthly against the systematic baseline.

Operational outcome. The workflow introduces behavioral discipline while preventing selective use of only the most attractive historical signal labels.

5.4 Use Case 3: Complete Signal Package Portfolio Construction

A multi strategy fund operates a VisionFX sleeve using the complete delivered signal package rather than a selected conviction subset.

Workflow.

1. The fund ingests the full hourly VisionFX feed.
2. Every valid signal is taken under the same pre committed portfolio rules.
3. Conviction labels are not used as entry filters or as a basis for excluding signals.
4. Conviction is retained only for risk reporting, exposure limits, drawdown review, and portfolio monitoring.
5. The sub portfolio runs in parallel to the fund's other strategies with its own P&L attribution and risk budget.

Operational outcome. The result is a standalone FX sleeve that preserves the complete package methodology and maintains clearly attributable P&L and risk controls.

5.5 Use Case 4: Backtest Enrichment for an Internal Research Pipeline

A research team builds new FX strategies. VisionFX serves as a feature in the team's internal feature library. The team does not need to trade VisionFX directly. Instead, it can regress candidate strategies against the signal to understand which dimensions of FX behavior each model captures or misses.

Workflow.

1. The research notebook ingests the full historical VisionFX archive at backtest time.

2. New strategy P&L is decomposed into a component explained by the complete VisionFX directional package plus a residual component. Conviction is retained separately as risk metadata rather than used to select observations.

3. Strategies whose P&L is dominated by the explained component are rejected as lookalike strategies with no incremental edge.

4. Strategies whose P&L sits in the residual are promoted to candidate status.

5. The decomposition shapes which strategies move to paper trading.

Operational outcome. VisionFX becomes an explicit screening filter against lookalike strategies. Candidates are evaluated on their residual contribution, not only on raw backtest P&L.

5.6 Use Case 5: Risk Team Monitoring of Internal Exposure

A risk team holds aggregate FX exposure across desks. VisionFX serves as an independent reference to flag desks running heavily against the systematic prior.

Workflow.

1. The risk dashboard ingests VisionFX hourly data and the firm's aggregate FX exposure.

2. When the VisionFX direction conflicts with the firm's aggregate exposure, the dashboard fires a flag.

3. The flag is treated as a prompt for the risk team to engage with the relevant desk and confirm that the contrary exposure is intentional. Conviction can prioritize the risk review but does not determine whether the signal is included.

4. The monthly review records whether the contrarian view was rewarded or punished.

Operational outcome. The product provides a structured input for risk versus desk dialogue, anchored to an external systematic reference.

5.7 Integration Patterns

- **Default delivery:** R2 object storage, with hourly CSV payloads.
- **Alternative delivery:** S3 with SNS notification, REST API, SFTP, and other agreed methods are available according to the client workflow.
- **Typical latency:** End to end delivery within approximately 7 seconds of bar close.

5.8 Why VisionFX

- Composite construction across seven independently motivated feature blocks, rather than a single indicator output.
- Designed to be consumed as a complete signal package, with every valid signal taken under the package rules.

- Conviction labeling is used for risk measurement and monitoring, not for selecting only a subset of signals.
- Each block contains sub blocks that contribute to calculating the signal.
- Per trade transparency through block level component scores, enabling downstream attribution.
- Carry modeling per year and per currency, available as a toggleable variant so carry attribution can be evaluated independently of the price signal.
- Falsification grade validation through a pre committed six axis stress test framework with an objective edge verdict.

6 NeosFX Use Cases

Product summary. NeosFX is a daily directional FX signal package covering G10 majors. It uses the same composite architecture as VisionFX, calibrated to approximately 20 day holding horizons over 11 years of history. The full signal stream is intended to be consumed as one package. Conviction labeling is retained as risk metadata and is not used to select only a subset of signals.

6.1 Target Users

- Macro pods running medium term directional FX positioning.
- Multi asset allocators sizing FX exposure within broader portfolios.
- Wealth management quant teams building rules based FX overlays.
- Family offices needing low touch FX directional input.
- Discretionary macro traders seeking systematic confirmation.

6.2 Use Case 1: Macro Pod Directional Sizing

A macro pod has a thematic view on a G10 currency. NeosFX is consumed as a complete medium horizon directional package within that thematic window.

Workflow.

1. The portfolio manager forms the macro thesis independently of NeosFX.
2. The pod ingests the complete daily NeosFX signal stream across the covered G10 majors.
3. Every valid signal is retained under the package rules rather than filtered by conviction tier.
4. NeosFX direction is used for timing and attribution across the full package.
5. Conviction labeling is used only for risk limits, exposure review, stop calibration, and monitoring.
6. The monthly P&L decomposition separates thesis correctness from the contribution of the complete signal package.

Operational outcome. The workflow creates disciplined medium horizon implementation while preserving the integrity of the complete NeosFX package.

6.3 Use Case 2: Multi Asset Portfolio FX Overlay

A balanced multi asset allocator wants FX overlay exposure within a fixed risk budget. NeosFX is the engine driving the overlay's directional decisions.

Workflow.

1. The daily feed lands in the allocator's risk system within minutes of the New York close.
2. The overlay sub portfolio rebalances daily based on the latest NeosFX signals across the covered G10 majors.
3. Total overlay notional is capped at a fixed percentage of fund NAV.
4. Per pair concentration is capped so no single pair can dominate the overlay.
5. Performance is reported alongside the core balanced book.
6. Carry contribution is isolated using the with carry workbook variant.

Operational outcome. The allocator obtains a diversified FX overlay sleeve operated within a pre committed risk budget. The approximately 13 day average holding period makes the configuration low turnover relative to intraday FX strategies.

6.4 Use Case 3: Complete Signal Package with Carry Attribution

An allocator consumes the complete NeosFX package while measuring carry as a separate attribution and risk component rather than as a signal eligibility filter.

Workflow.

1. The allocator ingests every valid NeosFX signal across the covered G10 majors.
2. No signal is removed because its direction has favorable or unfavorable carry.
3. The per year, per currency carry table is used to isolate the carry contribution from the directional signal contribution.
4. Conviction and carry fields are retained for risk measurement, exposure review, and client reporting.
5. The complete package remains stable when rate regimes shift because the attribution layer records how carry conditions changed over time.

Operational outcome. The allocator receives the complete directional package together with transparent carry attribution, avoiding selective signal filtering that could distort the intended methodology.

6.5 Use Case 4: Research Input for Macro Factor Models

A research team builds factor models for cross asset macro returns. NeosFX serves as a published directional FX factor that can be included in factor regressions without rebuilding the calibration internally.

Workflow.

1. The research team ingests the NeosFX historical archive across 11 years, the covered G10 majors, and daily bars.

2. The complete NeosFX directional package is added as a candidate factor in cross asset factor regressions. Conviction is retained separately as risk metadata rather than used to select or weight only preferred signals.

3. Loadings on equity, fixed income, and commodity returns are estimated.

4. The factor's contribution to cross asset model R^2 is documented in research notes.

Operational outcome. The research team receives an externally calibrated FX directional factor as a feature input, avoiding the need to rebuild the calibration from scratch.

6.6 Use Case 5: End of Day Risk Reporting

A multi strategy fund needs an end of day FX positioning snapshot for the risk committee. The complete NeosFX directional package provides the quantitative reference, with conviction retained as a risk measure.

Workflow.

1. The end of day risk pack ingests the NeosFX feed and the firm's aggregate FX exposure.

2. The report shows, per pair: firm exposure direction, firm notional, NeosFX direction, NeosFX conviction, and alignment status.

3. All material misalignments are recorded for next day desk dialogue. Conviction is used to prioritize the risk review, not to exclude signals from the package.

4. The quarterly review tracks whether misalignments were rewarded or punished as a learning signal for risk committee judgment.

Operational outcome. The fund obtains a structured end of day risk dialogue anchored to a quantitative external reference rather than pure narrative.

6.7 Integration Patterns

- **Default delivery:** Daily delivery through R2 object storage.
- **Alternative delivery:** S3 with SNS notification, API, SFTP, and other agreed methods are available according to the client workflow.
- **Latency profile:** Sub one minute typical delivery, with a five minute SLA after the 17:00 New York close.
- **Cadence fit:** One delivery per day matches macro and allocator workflows and does not require a high frequency ingestion stack.

6.8 Why NeosFX

- Same methodology rigor as VisionFX, calibrated for the slower decision cadence used by macro and allocator desks.

- Designed to be consumed as a complete signal package across G10 majors, with every valid signal taken under the package rules.
- Conviction labeling is used for risk measurement and monitoring, not for selecting only a subset of signals.
- Eleven year history covering two distinct rate regimes: zero interest rate policy and the post 2022 normalization period.
- Coverage across G10 majors under one consistent methodology.
- Carry modeling is available as a separate attribution and risk view, allowing the complete directional package to remain intact while carry effects are evaluated independently.

7 PulseAtlas Use Cases

Product summary. PulseAtlas is a systematic volatility forecast dataset designed to quantify Average True Range expansion and contraction pressure across global assets. It converts structured price behavior and multi scale volatility features into timestamped volatility forecasts with forecast direction, magnitude, prediction band, conviction tier, horizon, and realized outcome tracking.

7.1 Target Users

- Risk teams managing forward volatility exposure, VaR sensitivity, and position sizing frameworks.
- Options and volatility desks needing a systematic view on ATR expansion or contraction pressure.
- Execution desks seeking forward volatility context before routing or staging larger orders.
- Systematic research teams adding volatility forecast features to internal model libraries.
- Multi asset portfolio managers ranking instruments by expected volatility regime and conviction.
- Data buyers evaluating timestamped volatility signals for risk, execution, and options workflows.

7.2 What PulseAtlas Measures

PulseAtlas forecasts whether volatility, represented by Average True Range, is more likely to expand or contract over the selected horizon. Each observation is timestamped and linked to the instrument, forecast horizon, forecast direction, forecast magnitude, an 80% prediction band, conviction tier, and realized outcome tracking fields.

The methodology is designed around observed price behavior rather than options market data, broker flow, order flow, or survey based sentiment. It uses multi scale volatility features, range behavior, volatility of volatility, return shape, trend context, compression patterns, and ATR term structure to estimate forward ATR pressure.

The product is not intended to forecast price direction. Its institutional value is in identifying forward volatility conditions that can influence risk sizing, options exposure, stop distance, execution timing, and portfolio construction.

7.3 Use Case 1: Multi Horizon Volatility Feature

A systematic research team adds PulseAtlas to the firm's feature library as a medium horizon volatility forecast input. The signal is used to test whether forward ATR expansion or contraction pressure improves risk models, strategy conditioning, or options workflow decisions.

Workflow.

1. The research team ingests historical PulseAtlas forecasts across the selected universe.
2. Forecast direction, magnitude, horizon, prediction band, and conviction tier are added to the internal feature library.
3. Candidate strategies are evaluated inside expansion, contraction, high conviction, and normal conviction states.
4. The team measures whether internal model performance changes when conditioned on forecast volatility pressure.
5. Features that improve risk forecasting, execution planning, or options timing are retained in the production research pipeline.

Operational outcome. PulseAtlas becomes a reusable volatility feature set for multi horizon research. The firm can test whether forward ATR pressure improves existing models without treating the dataset as a standalone trading strategy.

7.4 Use Case 2: Volatility and Sizing Overlay

A portfolio manager or risk team uses PulseAtlas as a sizing overlay before adjusting exposure. The objective is to avoid increasing position size ahead of expected volatility expansion unless the position is intentionally structured for higher volatility.

Workflow.

1. The desk receives the latest PulseAtlas forecast for each held or monitored instrument.
2. Existing positions are checked against the forecast direction, magnitude, conviction tier, and horizon.
3. If PulseAtlas forecasts high conviction volatility expansion, the desk can reduce exposure, widen risk bands, adjust stops, or increase hedging.
4. If PulseAtlas forecasts contraction, the desk can assess whether lower expected ATR supports tighter sizing assumptions, passive execution, or options premium sale workflows.
5. The realized outcome fields are reviewed to compare the forecast volatility state against actual ATR behavior.

Operational outcome. The workflow gives the desk a forward volatility reference before changing position size, risk limits, stop distance, or options exposure.

7.5 Use Case 3: Portfolio Risk Construction

A multi asset portfolio team uses PulseAtlas to rank instruments by expected volatility regime and conviction. The objective is to build a risk allocation process that accounts for expected ATR movement rather than relying only on trailing realized volatility.

Workflow.

1. PulseAtlas forecasts are ingested across the portfolio universe.

2. Instruments are ranked by forecast ATR expansion magnitude, contraction magnitude, and conviction tier.

3. Assets with high conviction expansion forecasts are flagged for lower exposure, higher margin awareness, wider stops, or closer risk review.

4. Assets with contraction forecasts are reviewed as candidates for lower expected volatility allocations, subject to the firm's broader investment process.

5. Portfolio risk is recalibrated using both current volatility and forecast volatility pressure.

Operational outcome. The portfolio team receives a systematic forward volatility layer that can support position sizing, concentration control, and cross asset risk ranking.

7.6 Use Case 4: Regime and Holding Period Analysis

A strategy may perform differently when volatility is expected to expand versus contract. PulseAtlas can be used to segment strategy performance by forecast volatility state, conviction tier, and holding horizon.

Workflow.

1. The client maps historical trades or strategy signals against PulseAtlas states.

2. Performance is segmented by expansion forecasts, contraction forecasts, high conviction forecasts, normal conviction forecasts, and holding horizon.

3. The client evaluates whether execution models, options strategies, or directional strategies perform better in specific volatility states.

4. Production rules are adjusted to reduce exposure in weak volatility contexts and increase focus on states where internal models perform better.

Operational outcome. PulseAtlas provides a volatility regime lens for strategy evaluation, allowing clients to understand when internal models benefit from or suffer under expected ATR expansion or contraction.

7.7 Use Case 5: Options and Execution Workflow Support

Options and execution teams use PulseAtlas as a forward ATR reference. The dataset helps identify when volatility may expand enough to affect option premium behavior, stop placement, order urgency, and execution schedule.

Workflow.

1. The desk reviews PulseAtlas forecasts before executing option trades or large underlying orders.

2. High conviction expansion forecasts can support closer review of long volatility exposure, gamma demand, wider execution bands, or increased urgency.

3. Contraction forecasts can support lower urgency execution windows, premium sale review, or tighter expected range assumptions.

4. Prediction band fields help frame uncertainty around the forecast magnitude.

5. Realized outcome fields are used in post trade review to compare forecast ATR pressure with actual volatility behavior.

Operational outcome. The desk receives a structured volatility forecast feed that can support options timing, execution scheduling, ATR stop calibration, and post trade risk review.

7.8 Validation Framework

PulseAtlas is evaluated as a volatility forecasting dataset. The key question is whether the forecasted ATR expansion or contraction state improves on a naive random walk assumption that ATR remains unchanged.

The validation framework can include:

- **R squared versus random walk:** whether the model improves on assuming no future ATR change.
- **Directional accuracy:** percentage of forecasts correctly identifying expansion or contraction.
- **AUC:** ranking quality for separating future expansion from future contraction states.
- **Prediction interval calibration:** empirical coverage of the 80% prediction band.
- **Conviction lift:** whether high conviction forecasts perform better than the broader forecast population.
- **Per asset stability:** whether results are concentrated in one instrument or distributed across the covered universe.
- **Horizon robustness:** whether forecast quality changes across different holding periods.
- **Execution delay robustness:** whether the forecast remains useful when acted on after a delay.

PulseAtlas beat its stated benchmarks and passed all stress tests included in the supplied evaluation framework.

7.9 Universe and Coverage

PulseAtlas is designed for global asset coverage, subject to source availability, data quality, and client requirements. Coverage can include equities, ETFs, indices, FX, commodities, crypto assets, and selected rates or fixed income proxies where sufficient OHLC history is available.

The dataset can be configured around a focused instrument list, asset class package, regional universe, or broader multi asset coverage. Forecasts are timestamped and can be delivered at the agreed cadence for each selected universe.

7.10 Integration Patterns

- **Cadence:** Regular timestamped delivery, typically daily for end of day workflows, with configurable horizons depending on the client universe.
- **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.
- **Core fields:** Timestamp, asset, forecast direction, forecast ATR change, prediction band, signal direction, conviction flag, horizon, and realized outcome tracking.
- **Conviction structure:** High conviction identifies the top decile of absolute forecast magnitude by asset.
- **Research outputs:** Benchmark comparison, conviction analysis, calibration, per asset verdicts, horizon tests, entry delay tests, stability analysis, and forecast driver analysis.

7.11 Why PulseAtlas

- Focuses on volatility expansion and contraction rather than price direction.
- Converts ATR pressure into structured, timestamped, ticker mapped forecasts.
- Includes forecast magnitude, prediction band, conviction tier, horizon, and realized outcome tracking.
- Supports risk management, options workflows, execution planning, volatility targeting, and portfolio construction.
- Uses conviction labeling to separate high magnitude volatility forecasts from normal forecasts.
- Provides validation against a random walk volatility baseline, not only raw directional accuracy.
- Beat its stated benchmarks and passed all stress tests included in the supplied evaluation framework.
- Can be consumed as a feature, overlay, risk input, or dashboard feed without requiring clients to trade it directly.

8 Combined Product Stack

The six products are complementary within an institutional research stack:

- **Nexus** provides multi asset sentiment, pressure, confidence, and behavioral state intelligence.
- **Vertex** provides local and structural reversal location intelligence with calibrated conviction.
- **BoundaryAtlas** provides cross asset structural context and price boundary intelligence.
- **VisionFX** provides a complete short horizon FX directional package across G10 majors.
- **NeosFX** provides a complete medium horizon FX directional package across G10 majors.
- **PulseAtlas** provides forward volatility expansion and contraction forecasts.

A fund can subscribe to all six products without duplicating the same signal family across the stack. Nexus belongs to a behavioral signal family focused on market sentiment, pressure, reaction risk, and multi horizon event validation. Vertex belongs to a reversal location signal family focused on causal local and structural turning point detection, conviction, and EPI validated coincidence with realized extrema. BoundaryAtlas belongs to a structural signal family focused on zones, confluence, and breach probability. VisionFX and NeosFX are directional FX packages calibrated to different horizons and operating cadences; each is intended to be consumed as a complete package, with conviction labeling used for risk measurement rather than signal selection. PulseAtlas belongs to a volatility forecasting signal family focused on ATR expansion, contraction, forecast magnitude, and conviction labeling.

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

Product	What it adds	Typical role in the stack
Nexus	Market sentiment, pressure, confidence, and behavioral state detection	Alpha feature, timing overlay, regime filter, and cross asset intelligence layer
Vertex	Local and structural reversal location intelligence with calibrated conviction	Machine learning feature, directional confirmation, exposure review, cross sectional screening, and signal benchmarking
BoundaryAtlas	Structural support and resistance intelligence	Stop and target placement, breach monitoring, and technical screening
VisionFX	Complete short horizon FX directional signal package	Intraday FX timing, alpha overlay, and risk reference
NeosFX	Complete medium horizon FX directional signal package	Macro FX overlay and end of day risk reference
PulseAtlas	Volatility expansion and contraction forecasts with conviction labeling	Volatility feature, risk sizing overlay, options workflow input, and portfolio risk construction layer

Table 2: Complementary role of each product in the Quant Atlas stack.

9 Conclusion

Quant Atlas datasets are designed to fit into institutional workflows without requiring desks to abandon their existing models or discretionary processes. The products can be consumed as direct signals, complete signal packages, research features, risk inputs, overlays, or portfolio construction components.

Nexus provides systematic sentiment and market pressure intelligence across global assets. Vertex adds a causal reversal location layer designed to identify probable local and structural turning points after abnormal, overextended price states. BoundaryAtlas provides structural price boundary intelligence across multiple assets and horizons. VisionFX and NeosFX provide complete directional FX packages across G10 majors at different operating horizons, with conviction labeling used for risk measurement rather than selective signal inclusion. PulseAtlas provides forward volatility expansion and contraction intelligence across selected instruments and horizons.

The common thread across all six products is operational auditability: each workflow can be logged, attributed, and evaluated against the consuming firm's own process.

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.