

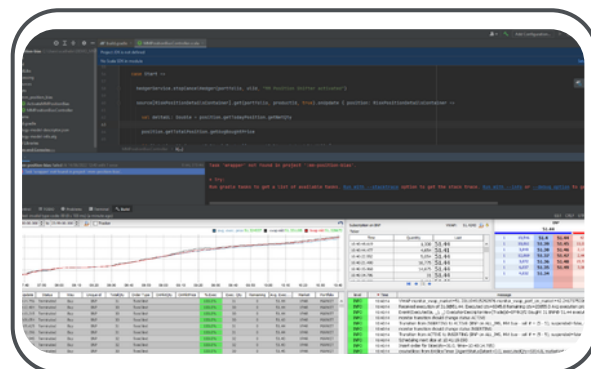
# Horizon Extend

## Unlock agility in algorithmic trading

Empower your team. Automate smarter. Build the execution logic you need.

In today's fast-paced markets, execution logic needs to evolve with your trading strategies, your workflows, and your infrastructure.

Horizon Extend is Horizon's open, modular **algorithmic development framework** that empowers financial firms to go further — by enabling **custom logic, fast prototyping, and seamless integration** of internal or external components.



Whether you want to use Horizon's **off-the-shelf algos** or **build your own**, Extend offers the control, performance, and testing capabilities required to **automate at scale**, without compromise.

## BUILT FOR CUSTOMIZATION AND SPEED

Horizon Extend comes with a complete suite of ready-to-use smart orders and slicing algos — from VWAP/TWAP to Pair Trading and Auto-Hedging — all **highly configurable**, and ready to use or extend.

Prefer to build your own? Use Extend's **Java/Scala-based environment**, leverage real-time data, and integrate third-party services (pricing, analytics, risk, OMS).

### Off-the-shelf algos

VWAP, TWAP, PoV

Implementation Shortfall

Auto-Hedging

Basket Hedget

Volatility Orders

Market Making

### Custom algos scripting

Custom triggers and logic

Event-based execution

Custom order routing

Position-driven logic

Multi-asset automation

Integrated risk signals

# Horizon Extend

## ONE FRAMEWORK. INFINITE POSSIBILITIES

Designed for technologists and traders



Automate workflows from RFQ to post-trade.



Integrate with external systems — pricing engines, MO/BO, risk.



Leverage full access to market data, position, pricing, order status.



Build real-time or historical data-based strategies (OHLC, tick, L3).



Use our UI or external interfaces to monitor, trigger, and adapt behavior.

Extend integrates natively with Horizon OEMS and Smart Order Router — but can also run independently or as an execution module for third-party OMSs or UI layers.

## CONTINUOUS INTEGRATION (CI) AND DELIVERY (CD)

Develop, test, and deploy your trading logic using the same tools and workflows your organization already relies on. Horizon Extend is CI/CD ready by design, meaning your algorithm development can seamlessly integrate into your existing development pipelines — just like any other software project. Your team can simulate, test, and optimize algos before deployment:

- Black box unit testing with expected outputs.
- Internal market simulator with controllable pricing.
- Real market data testing.
- Backtesting against historical datasets.
- Integration with real-time or replayed market data.

## ALGO MONITORING

Visualize performance. React in real-time.

Extend enables deep monitoring through Horizon's GUI:



Custom KPIs charted in real time



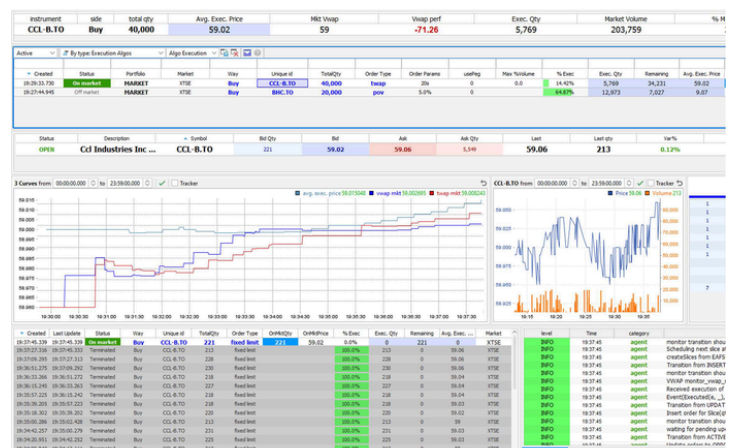
Interactive GUI for trader-algo interaction (toolbars, menus, shortcuts)



Full child order and log visibility



Alerts and dashboards for edge cases (wide spreads, errors, missing data)



## COMPLIANCE AND CONTROL BUILT IN

Horizon Extend offers robust capabilities for auditing and risk management — ensuring every algo action is verifiable and every order is validated before reaching the market.

Every order processed by Horizon — whether received, generated, or executed — is tracked. Horizon Extend logs:

- All parent and child order activity
- Algo decisions and parameters at every step
- Custom data fields added by user-developed algos
- Full execution history available for internal or external audits

This audit mechanism supports best execution reporting, integration with TCA tools, and compliance with MiFID II, Reg NMS, and other global mandates.

## PRE-TRADE RISK CHECKS

Before an order is sent to market, it passes through a comprehensive validation layer — configurable to match your firm's risk policies and compliance framework.

Validated dimensions include:

### Order Logic

- Fat finger checks: max quantity, notional
- Forbidden instruments: prevent accidental exposure

### Position Risk

- Net/gross exposure: by instrument, portfolio, or client
- Greek limits: (delta, vega, gamma) when pricing is enabled

### Market Context

- Price range controls: avoid sending orders too far from market
- Volume controls: block orders exceeding ADV, AOC, ACV limits
- Throttling: control excessive order flow over short time periods

### Brokerage and Margin

- Validate cash, margin, or short-sell availability
- Enforce “close-only” or intraday margin rules

### Compliance Rules

- Daily volume limits
- Price deviation thresholds
- Anti-self-matching mechanisms

Each rule can be tailored to user, desk, asset class, or venue — and most operate in a pessimistic mode, meaning risk-increasing orders are blocked immediately, while risk-reducing ones are only considered once executed.

## LEVERAGE YOUR OWN INTELLIGENCE

With Horizon Extend, you are not locked into one model. Use our building blocks and overlay your own IP, data science models, or risk analytics. Protect your code. Own your strategy. We don't need to see it

Key use cases:

Extend your reach. Build smarter workflows.

### Gamma Hedging with External Risk Systems

Automatically compute and execute hedging strategies (e.g. gamma, delta) based on position data retrieved from external risk platforms. Horizon Extend acts as the decision engine, reacting to position changes or risk threshold breaches in real time and generating the appropriate hedge orders — fully integrated into your workflow.

### Automated FX Hedging for Cross-Currency Trades

Trigger FX hedge orders seamlessly when trading instruments in foreign currencies. With just a few lines of code, clients can automate the hedging logic for each trade, net across portfolios, or align to corporate treasury policies — reducing exposure and manual intervention.

### Smart RFQ Response by Email or API

Enable a custom pricing and quoting logic that responds to RFQs received by email or via API. Extend connects to Horizon's built-in pricing engine, generates the quote, and sends the response automatically — helping clients streamline operations and improve response time for frequently traded instruments.

### Market Making with External Price Feeds

Use Extend to integrate third-party pricing models or theoretical price engines (via REST, Kafka, etc.). These prices can be used in real-time to fuel Horizon's native automaton, control bid/ask placement, and synchronize with external trading platforms — while keeping the external system as the central view of market status.

### Custom Volatility-Based Execution Strategies

Develop advanced execution algorithms based on volatility targets or risk exposures (e.g., delta, vega). Extend supports execution logic that dynamically adjusts price and volume based on changing market volatility, including dispersion strategies like HVO/HVS and hedged vol baskets.

### AMC Execution for Rebalancing Baskets

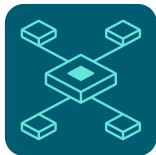
Automate the execution of frequently rebalanced baskets, such as AMC (Actively Managed Certificates), by embedding custom logic for order prioritization, slicing, and timing — while leveraging Horizon's native execution and monitoring components.

## WHAT MAKES IT DIFFERENT?



### Fast

Rapid algo prototyping  
CI/CD enabled



### Flexible

Java/Scala SDK  
Connect to any system



### Scalable

Built-in support for multi-asset workflows  
Use Horizon's SOR, OMS & trading stack



### Compliant

Pre-trade risk rules and audit logs  
Built-in compliance rules (MiFID, margin, etc.)



### Monitorable

Live dashboards and full control loop  
Trader-friendly UI for all logic

## ABOUT HORIZON

Horizon Trading Solutions is an independent global technology company specializing in electronic trading, supporting agency and principal businesses across equities, derivatives, and virtual assets. For over 20 years, we have empowered the world's leading capital market participants with cutting-edge algorithmic technology and direct exchange connectivity. Our multi-asset platform and deep commitment to client success allow us to deliver performance simplified: making it easy to excel in trading.