RESEARCH / RISK / TRADING / OPERATIONS

AI, woven into the investment process

Finding a signal is only the beginning. Hokma connects learned models, a language-model agent and controlled automation across the work of investing, and says where each one sits.



The investment process is a network of decisions, with information passing between them.

An investment idea does not end with a forecast. Someone must decide what information matters, how much risk to take, how to trade, and what to do when the records do not agree. The quality of the process depends on all four.

Hokma is embedding AI into that chain. Learned models search for relationships between markets and for similarities between instruments; a language-model agent reads the operational record; deterministic automation carries portfolio decisions into orders. Each paper in the series says exactly where learning enters, and where it does not.

The change is in the daily work. Research can revisit its inputs every day. Risk can size positions on a learned view of how connected each instrument is to the rest of the book. Trading carries targets to contracts under an information clock and a pre-trade gate. Operations can read several failed checks as one possible problem.

The aim is to search more broadly, allocate risk with richer information and focus human attention where it matters. People retain responsibility for the mandate, model promotion and exceptions, and every stage writes a record that can be checked afterwards.

ONE INVESTMENT PROCESS, FOUR DECISIONS

What each function decides, what it hands on, and where learning enters. Status as stated in the version 1.0 papers.

01 Discover — RESEARCH

DECIDES
Which information deserves a place in each forecast

LEARNING ENTERS
score-based structure search, daily, per target

operating in production harness, registration: UAT interpretation: prototype

dated parent sets, forecasts, evidence →

02 Allocate — PORTFOLIO RISK

DECIDES
How much of each instrument the book should hold

LEARNING ENTERS
similarity learned from return paths, refit each run

route + 14-family gate: operating controlled comparison: to run

weights, bounds, gate verdict →

03 Execute — TRADING

DECIDES
How a target becomes contracts, orders and fills

NO LEARNING OPERATING
deterministic route under a clock and a gate

infrastructure: operating cost benchmark: specified urgency policy: proposed (L)

orders, fills, ledger rows →

04 Oversee — OPERATIONS

DECIDES
Which failed checks are one problem, and who acts

LEARNING ENTERS
read-only triage agent reads the record

checks + agents: daily since Jun 2026 incremental benefit: measuring

incidents, adjudications and filed outcomes return to review (feedback loops proposed)

HUMAN JUDGMENT + DEFINED LIMITS + A RECORD THAT CAN BE CHECKED

AI Quant generates the edge; AI Risk, AI Trader and AI Ops preserve it.

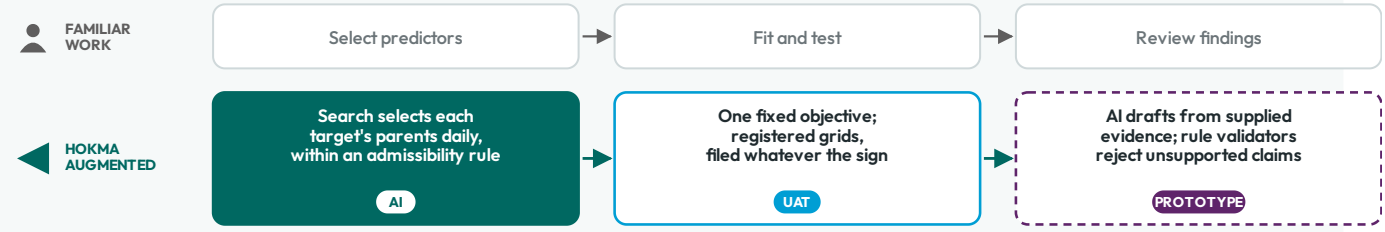
How the investment decisions change

The common thread is a change in what the system can reconsider. Research revisits which inputs matter; risk examines learned patterns of similarity. Both bring changing market relationships into familiar investment decisions, and both name the one point where learning enters.

01 Research: keep the question open

Research normally begins with a modeller choosing the variables that might explain a market. Hokma's structure search lets that information set change by instrument and by day: for each target it selects, from a cross-market pool of instruments and lags, the small set whose recent moves best explain the next day's direction. A relationship that fades can give way to another found elsewhere in the pool, and only inputs available before the forecast cutoff are admitted.

That wider search needs discipline. One fixed objective grades every forecast stream daily by the position it could carry inside a drawdown tolerance, and hypothesis grids are registered and filed whatever their sign. The search operates in production; the evaluation harness and registration are built research tooling, in user acceptance and not yet released. A generative stage that drafts explanations from supplied evidence, with rule-based validators rejecting unsupported claims, is a prototype.



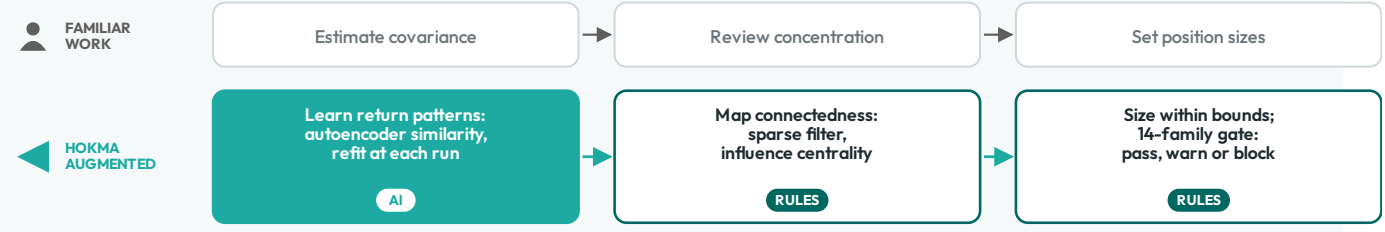
Output: dated parent sets, forecasts and evidence for researcher review.

The search operates in production. The harness and registration are built research tooling in user acceptance, not released; the interpretation stage is a prototype.

02 Risk: see the connections beneath the book

A portfolio can hold many instruments yet depend on the same economic outcome. Standard covariance already addresses this. Hokma adds a learned view of return patterns: an autoencoder, refitted at each run, compresses each instrument's recent return path into a code, and the distance between codes gives a similarity.

A sparse topology-preserving filter keeps the strongest links; an influence centrality scores how connected each instrument is; and the score rescales the covariance that an established risk-budgeting allocator solves within per-instrument bounds. Learning changes the allocator's input, not the allocator. Whether that input improves construction at common risk, net of the turnover it adds, is the controlled comparison the paper defines.



Output: constrained portfolio weights and a pre-trade verdict.

Learning changes the allocator's input, not the allocator. The route and the gate operate on the macro book; the controlled comparison against a correlation-based route is still to run.

Sources: Adaptive Cross-Market Discovery with Controlled Validation; Learning Market Connectedness for Portfolio Construction. Hokma IQ working papers, version 1.0, October 2026. Search statistics are from the production configuration run in the pre-production environment. Diagrams simplify the documented processes.

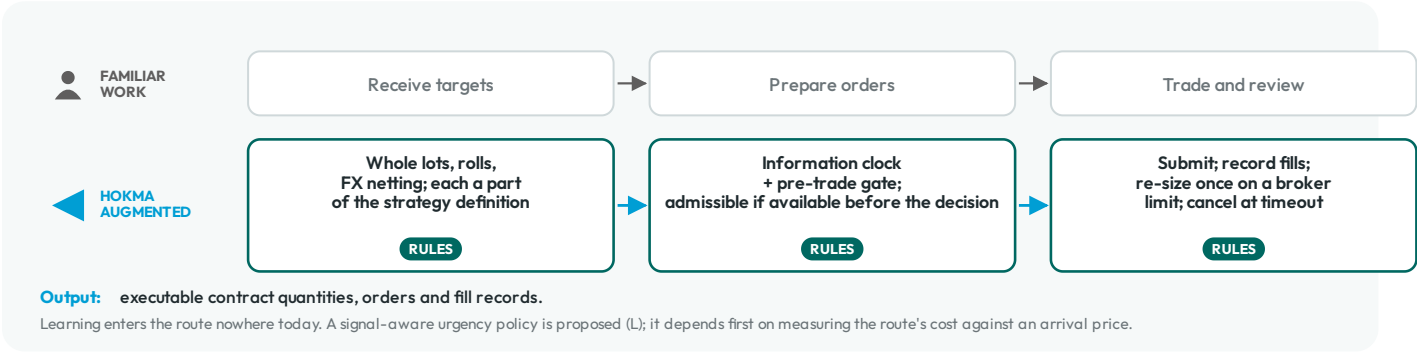
From the forecast to the trading day

A forecast only becomes an investment outcome through feasible trades and a portfolio that is fit to operate. Execution and oversight connect model outputs with the practical details that preserve or erode their value.

03 Trading: make the signal executable

The portfolio still has to buy or sell real contracts. Weights become whole lots, futures roll, currency exposure is netted, and every target passes a pre-trade gate before an order is submitted. Hokma automates this route and treats each implementation assumption as part of the strategy definition, so each stage writes its row as it acts.

The route is deterministic: learning enters it nowhere today. Four instants that "daily close" conflates, the market timestamp, the available-at instant, the decision and the execution, are kept apart, and an input is admissible only if it was available before the decision. A signal-aware urgency policy, which would work an order faster or slower according to the forecast's strength and horizon, is proposed; it depends first on measuring the current route's cost against an arrival price.



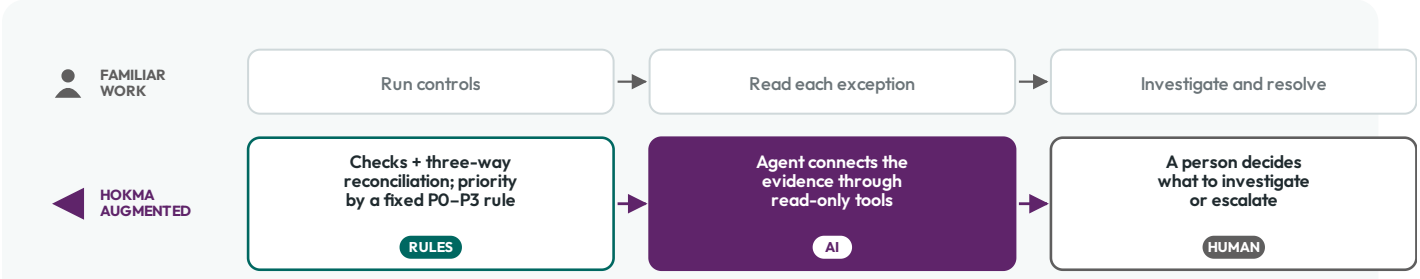
Output: executable contract quantities, orders and fill records.

Learning enters the route nowhere today. A signal-aware urgency policy is proposed (L); it depends first on measuring the route's cost against an arrival price.

04 Operations: find the story behind the alerts

One late price file can make several checks fail. An analyst must decide whether these are separate issues or symptoms of one cause. Hokma's deterministic checks and three-way reconciliation, across the order system, the ledger and the broker's record, identify failures and assign priority by a fixed rule; a read-only language-model agent then reads the related records and proposes an explanation.

The agent produces a structured brief: grouping, likely causes, evidence and an order for review. Its tools are a typed lookup and a capped web search; none releases an order or alters a record, and every run leaves a transcript and a tool-call count. A person decides what to investigate or escalate. The agents have run daily since June 2026; their incremental contribution to detection and resolution is being measured, and a human-committed register of known noise is proposed.



Output: prioritised incident briefs, source evidence and tool-call traces.

Checks and triage agents run daily, since June 2026. Their incremental contribution is being measured; a human-committed known-noise register is proposed.

Sources: Closing the Gap Between Forecast and Executable Return; Context-Aware Exception Intelligence for Investment Operations. Hokma IQ working papers, version 1.0, October 2026. The late-price-file case is illustrative. Diagrams simplify the documented processes.

The toolkit, in plain English

Different tasks call for different techniques. This map keeps the familiar AI vocabulary and shows the specific component behind each label, with its status as the papers state it.

N In use · V Built, in UAT · P Prototype · B Building block · F Proposed · – Not reported

AI architecture / capability	Research	Risk	Trading	Operations
Machine learning Structure search / deep learning	N Score-based structure search	N Autoencoder similarity, refit each run	B AI-derived targets	N Language-model inference
Generative AI / LLMs Write from evidence	P Evidence-caged research notes	–	–	N Incident narratives
Orchestration + judge Coordinate work; check results	V Bounded runs; rule validators	N Build stages; 14-family gate	N Order stages; pre-trade gate	N Suites, agents; run checks
Skills / packaged procedures Repeat a defined task	V Registered test procedures	N Reusable allocation steps	N Roll, rounding, FX-netting rules	N Check suites; tool manifest
Temporal knowledge graphs Connect facts through time	B Dated parent sets	B Daily similarity networks	B Target / order records	F Known-noise register
Generate–evaluate–retry Draft, check and try again	P Draft, validate, retry / fallback	–	–	N Degraded-narrative fallback
Tool-using LLMs Read evidence through tools	B Supplied evidence (no tool calls)	–	–	N Read-only: typed lookup, capped web search
Routing + structured output Pass usable, typed results	P Typed evidence and reports	N Weights and gate verdicts	N Order fields and states	N Grouping, severity, evidence
Dependency / network graphs Map which things connect	N Parent dependencies	N Market similarity network	B Target / order lineage	B Common-cause grouping
Persistent / scheduled agents Run recurring work in background	B Daily model runs	B Scheduled portfolio builds	B Scheduled execution	N Daily read-only triage agents
Identity, permissions, audit Set boundaries and keep records	V Run limits; trial register	N Human-set bounds; gate records	N Trade permissions; order ledger	N Read-only tools; audit record
Learned control policies Learn actions from feedback	–	–	F Urgency policy; method not specified	–

N refers to the component named in its cell, including specified automation. V marks tooling that is built and in user acceptance but not released; P a prototype whose evaluation is not yet reported. B marks ingredients rather than the full named architecture: dated records are not complete temporal knowledge graphs, and scheduled jobs are not autonomous agents. Research language models receive supplied evidence and make no tool calls. Rows overlap; they are not a count of separate models. The urgency policy is proposed with no method specified; the Trader paper implies no reinforcement-learning agent.

WHAT MAKES THE COMBINATION MATTER

The potential advantage lies in connecting adaptive market models with repeatable testing, controlled implementation and firm-specific operational context. The papers describe what operates today, name the point where learning enters each function, and define the experiments needed to establish incremental investment and operational value. None reports profit and loss.

READ THE FOUR WHITE PAPERS

Adaptive Cross-Market Discovery with Controlled Validation

AI Quant · Jonathan Lee, Valeriia Pervushyna

Closing the Gap Between Forecast and Executable Return

AI Trader · Jonathan Lee, Piotr Wolkowski

Learning Market Connectedness for Portfolio Construction

AI Risk · Jonathan Lee, Valeriia Pervushyna

Context-Aware Exception Intelligence for Investment Operations

AI Ops · Jonathan Lee, Piotr Wolkowski

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Sources: Hokma IQ AI Quant, AI Risk, AI Trader and AI Ops working papers, version 1.0, October 2026. For information only; not an offer or a representation of investment performance.