

VectorMind AI for Mining

**Predictable production,
compliant commercial
decisions.**

Secure, auditable Gen-AI that turns mining documents, sensor streams and systems into timely operational and commercial insight — without exposing IP or sensitive data



Mining operators contend with high-volume telemetry, complex contracts (royalty, offtake, services), fragmented ERP and logistics systems, and strict safety and environmental compliance. Manual data capture, slow incident investigation and dispersed decision evidence increase cost, operational risk and regulatory exposure. CohesionX's VectorMind embeds enterprise-grade Gen-AI across the mining lifecycle to extract authoritative data, link provenance, automate rules and surface explainable recommendations — all with tenant isolation, full audit trails and policy controls suited to global regulators and lenders.

Assay, Grade Control & Quality Acceptance

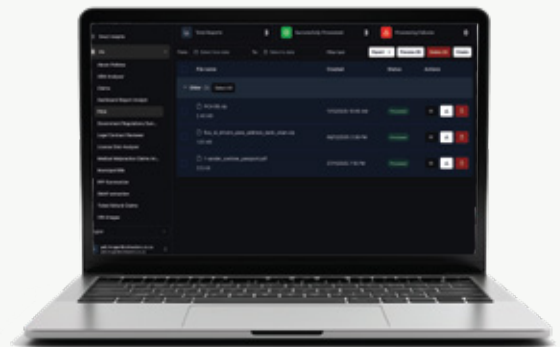


business GPT

Variability between reported assays, shipment quality and payable metal leads to revenue leakage and disputes; VectorMind automates assay ingestion, links lab certificates to dispatch and enforces contractual quality acceptance rules to protect revenue.

How it works:

- **Ingest:** Iris ingests lab assay certificates, sample chain-of-custody forms, weighbridge tickets and dispatch manifests via secure feeds or portal uploads.
- **Extract & Normalise:** Iris extracts sample IDs, batch/lot IDs, assay readings, detection limits, sampling dates and lab metadata; normalises units and detection thresholds.
- **Link & Contextualise:** Atlas links assay records to lot IDs, dispatches and offtake/contract terms; builds an evidentiary graph showing provenance of each sample and its processing history.
- **Validate & Enforce:** Neuroflow applies quality acceptance rules from offtake and sales contracts (tolerances, deduction formulas), flags non-conformances and opens exception cases with prefilled evidence.
- **Reason & Recommend:** Business GPT summarises likely revenue impact, suggests negotiation positions or rectification actions (re-sampling, blending) and prepares templated communications for counterparties.
- **Orchestrate Actions:** Neuroflow routes cases to QA, commercial and logistics with SLA tracking, triggers holds on shipment invoicing where required and records approvals.
- **Search & Audit:** Synaptic Search surfaces precedent dispute outcomes and Atlas provides auditor-ready evidence packs.



Gains

- **Faster detection of quality deviations** and reduced revenue leakage from incorrect payables.
- **Defensible, source-linked evidence** for offtake disputes and claims.
- **Automated enforcement of contractual quality rules** and faster resolution via prefilled dossiers.
- **Better production planning** through rapid identification of blending opportunities and quality trends.
- **Reduced manual reconciliation** between lab, dispatch and commercial teams.



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Production, Dispatch & Inventory Reconciliation



Mismatches between mine production reports, stockpile surveys and dispatch records create lost metal, invoicing errors and shipment disputes; VectorMind reconciles records, surfaces anomalies and automates exception workflows to restore accurate inventory and revenue accounting.

How it works:

Production logs, stockpile surveys, weighbridge and dispatch manifests are ingested, then normalises tonnage and grade attributes; Neuroflow runs reconciliation rules against ERP and TMS, uses Atlas to assemble evidentiary graphs for anomalies and opens exception workflows with prefilled dossiers while Business GPT summarises discrepancies and suggested corrective actions.



Faster resolution of stock issues | Clear provenance for dispatch & inventory | Reduced settlement disputes

More Mining Use Cases



Health, Safety & Incident Investigation

Incident reports, photos, telemetry spikes & witness statements are scattered, delaying root-cause analysis & corrective action. Iris ingests incident forms, photos, telemetry and maintenance logs; Atlas links incidents to training records, permits etc.



Environmental Monitoring & Compliance Reporting

Diverse sensor streams, lab results & regulatory reports prohibits compliance aggregation and timely submissions. Iris normalises sensor feeds and lab reports; Atlas assembles evidence graphs per reporting period; Business GPT generates narratives.



Equipment Maintenance & Reliability

Siloed inspection reports, vibration data & maintenance logs lead to reactive maintenance & unplanned downtime. Iris ingests inspection reports and telemetry, Atlas correlates asset histories & OEM manuals, Business GPT recommends prioritised maintenance & spare parts, & Neuroflow schedules work orders & enforces SLAs.



Contract, Royalty & Offtake Management

Complex royalty formulas, nested contract clauses & many offtake agreements create calculation errors & disputes with partners. Iris extracts contractual clauses & payment terms, Atlas links amendments & precedent clauses, Neuroflow automates royalty calculations.



Supply Chain, Logistics & Port Operations

Fragmented logistics records, container/rail/road manifests & terminal receipts cause shipment delays & demurrage or detention charges. Iris extracts manifests, bills of lading and terminal receipts; Neuroflow matches shipments to orders and schedules, and flags delays.



Finance, Taxation & JV Accounting

Multi-jurisdictional tax rules, JV participation & royalty reporting demand precise provenance & reconciled accounting. Iris captures invoices, tax forms & JV statements; Atlas maps contractual participation & allocation rules; Neuroflow automates reconciliation.



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VectorMind provides an affordable, easy-to-integrate Gen-AI solution, giving your employees access to the magic of all the top global commercial Gen-AI platforms, without exposing IP and sensitive data.



Get rid of tedious
tasks & human error



Automate actions &
set alerts



Always ensure factual
AI answers



Homegrown
affordable South
African software

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