CELEBAL TECHNOLOGIES | CausalX.ai

CausalX
A Decision Intelligence Platform

Traditional Enterprise meets Modern Cloud Solutions

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SAP S/4 HANA

ORACLE

salesforce

SAP BW

SAP ECC

Supply Chain | Finance | Procurement | Logistics

Azure AI Foundry

Fabric

Azure

Power BI

Power Platform

Copilot Studio

Copilot

Azure Databricks

Microsoft Teams

Azure IoT

Azure Sentinel

Microsoft Solutions Partner

Microsoft AI
Partner of the Year – Finalist 2025

Microsoft AI
Partner of the Year - 2023

Microsoft Country
Partner of the Year - India - 2021-22

Microsoft AI
Partner of the Year - India - 2024

Microsoft Rising Star
Partner of the Year - APAC - 2023

Azure Data & AI
Partner of the Year - Malaysia - 2022

1550+ Azure Certifications

1000+ Databricks Certifications

800+ Fabric Certifications

Azure AI Foundry

500+ AI Certifications

Advanced Specialization

- AI Platform on Microsoft Azure
- Analytics on Microsoft Azure
- Infra and Database Migration to Microsoft Azure
- Kubernetes on Microsoft Azure
- Cloud Security

Industries We Serve

Manufacturing | Retail & CPG | Financial Services | Energy & Sustainability | Healthcare & Life Sciences | Media & Entertainment | Education

Global Presence

Americas | Europe | Middle East | APAC (India, SEA, Australia, Japan)

What is CausalX AI

A conversational causal analytics platform where users ask natural-language questions about business operations and receive structured, evidence-backed answers that trace root causes through an ontology-defined causal network.

For Non-Technical Users

Like having 12 specialist analysts who instantly query your data, cross-reference findings, and produce unified reports in 15 seconds, not 3 days.

For Business Stakeholders

Root cause analysis on demand, causal pathway visualization, evidence-backed insights, actionable recommendations, counterfactual scenarios, full audit trail.

For Technical Stakeholders

Full-stack application with FastAPI backend, LangGraph state machine orchestrating 12+ agents, ontology engine, skill execution system, LLM synthesis pipeline, React frontend.

CausalX AI: Platform Understanding

Enterprise-grade analytics that answers **WHY** — not just what happened, but what caused it, what is at risk, and what should be done about it.

The Dashboard Gap

Every enterprise has the tools to see performance decline. Almost none have the tools to explain it.

What Dashboards Give You

- Static KPIs — Revenue dropped 12%, margins compressed, throughput fell
- Manual drill-down required to investigate further
- Analyst-dependent insights — subjective, time-consuming, non-repeatable
- Results delivered in 2–3 days (or weeks) after the event

What CausalX Gives You

- Ranked, contributing root causes with exact attribution percentages
- Full causal chain — from originating factor to business impact
- Evidence-backed answer delivered in 15–30 seconds
- Reproducible reasoning — ontology-grounded, auditable, defensible

The Business Cost of the Gap: Every week of delayed root cause = compounding financial damage. War rooms, analyst cycles, escalations — all are symptoms of the same problem. CausalX closes the gap between knowing something is wrong and knowing exactly why.

The Three Gaps CausalX Closes

CausalX is purpose-built to close three gaps that no existing analytics tool addresses.

The Causality Gap

Traditional tools show correlation: "Revenue and availability both dropped." CausalX delivers causation: "Availability dropped because of turbine fouling, which caused the revenue drop." Directed Acyclic Graphs (DAGs) ensure every insight is causally grounded — not statistically coincidental.

The Speed Gap

A root cause query that takes an analyst 2–3 days is answered in 15–30 seconds. Multi-agent orchestration: 12+ specialized AI agents activate in parallel, each querying a specific data domain. The result: diagnosis before the damage compounds, not after.

The Trust Gap

Every claim CausalX makes is backed by specific data evidence. Source traceability: SQL table name, row count, severity indicator, confidence score. No hallucination. No unsupported assertions. Full audit trail. Critical for regulated industries: energy, banking, healthcare, pharma.

Core Concepts: Causal Reasoning

Correlation tells you two things happened together. Causation tells you why one caused the other. CausalX only speaks in causation.

Causal DAGs

Directed Acyclic Graphs where each agent operates on its own causal sub-graph. Edges are directional — cause points to effect, never the reverse. Strength-weighted edges (0.0–1.0) indicate the driving force of each relationship.

Ontology Traversal

The system walks through entity relationships to connect questions to the right data. Ensures the answer is grounded in domain knowledge, not pattern-matching.

Counterfactual Reasoning

CausalX answers: "What would have happened if we had acted sooner?" Example: "If turbine wash had been done 10 days ago, heat rate would be 9,957 instead of 10,192 — saving ₹16 lakhs." Turns root cause into a forward-looking financial decision tool.

What Separates CausalX from Generic LLMs: Generic LLMs generate plausible text — they can hallucinate root causes that sound correct. CausalX derives insights from actual data, traverses an evidence-backed ontology, and cites every claim with source traceability.

Multi Agent Architecture

A single LLM prompt cannot simultaneously reason about asset health, financial margins, process performance, and supply chain constraints. CausalX uses domain-specialized agents — each an expert in its own causal domain.

Perception Layer

Reads relevant sensor streams and data sources for its assigned domain

Causal Model Layer

Runs causal inference on its designated sub-graph

Attribution Layer

Quantifies contribution percentages and confidence scores

Output Layer

Formats findings for the specific user persona

Feedback Loop

Learns from action outcomes to refine future analysis

Each business domain requires specialized knowledge, different data tables, and different causal reasoning patterns. A "general" AI assistant averages across domains and loses precision — the wrong tool for root cause analysis. CausalX deploys one agent per Influencing Value Driver (IVD) — each agent has its own causal DAG, system prompt, data skills, and output format.

Key Takeaways

01

Answers "Why" Questions

Not just what happened, but what caused it, what is at risk, and what should be done about it

02

Reduces Analysis Time

From 2–3 days to 15–30 seconds for root cause analysis

03

Provides Evidence-Backed Insights

Every claim backed by specific data evidence with SQL table provenance

04

Delivers Actionable Recommendations

Prioritized actions with owners, timelines, and estimated impact

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Use Cases

Manufacturing: Production Yield Collapse

Persona: VP Manufacturing / Head of Quality | **Pod:** Discrete Manufacturing

Business Trigger

End-of-line defect rate spikes from 2.1% to 6.8% over 10 days. Daily production target missed for 3 consecutive shifts with customer SLA breach risk triggered.

Root Cause Identified

Temperature variance (+4°C above spec) in granulation Step 3 contributing 58% of defect increase (91% confidence). Secondary: Incoming material batch deviation contributing 29%.

Financial Impact

₹38 lakhs rework and scrap cost over 10 days. ₹22 lakhs/month customer penalty exposure. ₹1.8 Cr projected annual impact if unaddressed.

Recommended Actions

Immediate: Recalibrate process Step 3 temperature control (24 hrs). Short-term: Reject incoming material batch. Structural: Implement real-time SPC monitoring.

Manufacturing: Unplanned Line Shutdown

Persona: COO / Plant Head | **Pod:** Process Manufacturing

Business Trigger

Critical production line unplanned shutdown with undiagnosed cause after 6+ hours. Cross-functional war room assembled with different hypotheses. Every hour offline = ₹12 lakhs lost production.

Root Cause Identified

₹72 lakhs lost production (6 hours). ₹28 lakhs emergency replacement cost. Forward risk: 3 motors show similar vibration signature — ₹1.4 Cr exposure if unaddressed.

Financial Impact

Bearing wear on Motor M-07 → Vibration threshold breached → Safety interlock activated → Downstream equipment starved → Line shutdown. CausalX identified cause in 22 seconds; war room active for 6 hours.

Recommended Actions

Immediate: Replace Motor M-07 bearing (8 hrs, ₹28 lakhs). Short-term: Vibration inspection on 3 similar motors. Structural: Deploy continuous vibration monitoring across all critical motors.

BFSI: NPA Ratio Spike

Persona: Chief Risk Officer / Head of Retail Lending | **Pod:** Retail Banking

Business Trigger

NPA ratio for unsecured personal lending portfolio spikes from 3.2% to 5.3% over one quarter. Board and RBI scrutiny escalated. Regional analysis shows North region +3.8%, South region +0.4%.

Root Cause Identified

Underwriting policy change 9 months prior — FOIR threshold relaxed from 50% to 62% for North region contributing 52% (88% confidence). Rate hike cycle impact contributing 31%.

Financial Impact

₹18.4 Cr incremental provisioning requirement. ₹6.2 Cr revenue at risk from delinquent portfolio. ₹3.1 Cr collections cost increase.

Recommended Actions

Immediate: Revert FOIR threshold to 50% for North region (7 days). Short-term: Targeted collections intervention for borrowers with FOIR >58%.

BFSI: Insurance Claims Leakage

Persona: Chief Actuary / VP Claims Operations | **Pod:** General Insurance

Business Trigger

Claims loss ratio for motor insurance portfolio climbs from 68% to 79% over two quarters. Finance flagging ₹22 Cr excess claims spend vs. budget. No clear explanation from claims team.

Root Cause Identified

Third-party garage network over-billing — 14 partner garages billing 22–35% above approved rates contributing 44% (87% confidence). Policy wording ambiguity contributing 33%.

Financial Impact

₹9.7 Cr recoverable from garage network audit. ₹7.3 Cr reduction potential from policy clarification. ₹22 Cr total annual leakage identified — ₹17 Cr addressable.

Recommended Actions

Immediate: Suspend 14 over-billing garages; initiate audit (14 days). Short-term: Issue revised adjuster guidelines; mandatory re-training (30 days).

Healthcare/Pharma: API Batch Rejection

Persona: VP Manufacturing / Head of Quality Assurance | **Pod:** Pharmaceutical Manufacturing

Business Trigger

API batch rejection rate exceeds 4.5% threshold for 3 consecutive weeks. 4 batches rejected representing ₹3.2 Cr destroyed inventory. Regulatory audit risk elevated with CDSCO inspection in 6 weeks.

Root Cause Identified

Humidity deviation (+8% above spec) during granulation stage contributing 63% (92% confidence). HVAC sensor calibration drift in Granulation Room GR-04 undetected for 22 days — cause of humidity deviation.

Financial Impact

₹3.2 Cr destroyed inventory. ₹85 lakhs investigation and re-testing costs. Regulatory non-compliance risk: potential warning letter + production halt = ₹12–40 Cr estimated exposure.

Recommended Actions

Immediate: Recalibrate HVAC sensor GR-04 (4 hrs); halt production until confirmed. Short-term: Audit all HVAC sensors across 12 production rooms; schedule calibration every 90 days.

Healthcare: ICU Readmission Rate Rising

Persona: Chief Medical Officer / VP Clinical Operations | **Pod:** Hospital Operations

Business Trigger

ICU readmission rate within 30 days climbs from 8.2% to 13.7% over one quarter. Insurance reimbursement at risk as payer contracts penalize readmission rates above 10%. Readmission variance high across physician groups.

Root Cause Identified

₹2.8 Cr excess readmission costs (each readmission = ₹1.4–2.2 lakhs in uncompensated acute care). ₹1.6 Cr payer penalty risk from contract breach if rate stays above 10%.

Financial Impact

Early discharge decisions by one physician group — average LOS 1.8 days below clinical protocol for cardiac patients contributing 47% (86% confidence). Post-discharge medication protocol gap contributing 36%.

Recommended Actions

Immediate: Flag discharge decisions below LOS protocol for identified physician group; CMO review (48 hrs). Short-term: Mandatory medication reconciliation sign-off by clinical pharmacist before discharge.

Supply Chain: OTIF Decline

Persona: VP Supply Chain / Head of Logistics | **Pod:** Order Fulfillment

Business Trigger

On-Time-In-Full (OTIF) score drops from 94.2% to 81.7% for key customer segment over 6 weeks. Contractual SLA breach triggered — penalty clause of ₹45 lakhs/month activated. Customer relationship at risk.

Root Cause Identified

WMS software update 7 weeks prior altered batch processing sequence — increasing pick-and-pack cycle time by 38% for orders >20 SKUs contributing 51% (91% confidence). Carrier capacity crunch on North-East lane contributing 34%.

Financial Impact

₹45 lakhs/month contractual penalty already triggered. ₹18 lakhs additional freight cost from emergency carrier alternatives. Customer relationship at risk — estimated ₹3.2 Cr annual contract in renewal discussion.

Recommended Actions

Immediate: Roll back WMS batch processing configuration to pre-update settings (4 hrs). Short-term: Activate secondary carrier contracts for North-East lane; negotiate temporary capacity with 2 backup carriers (3 days).

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Solution Snippets

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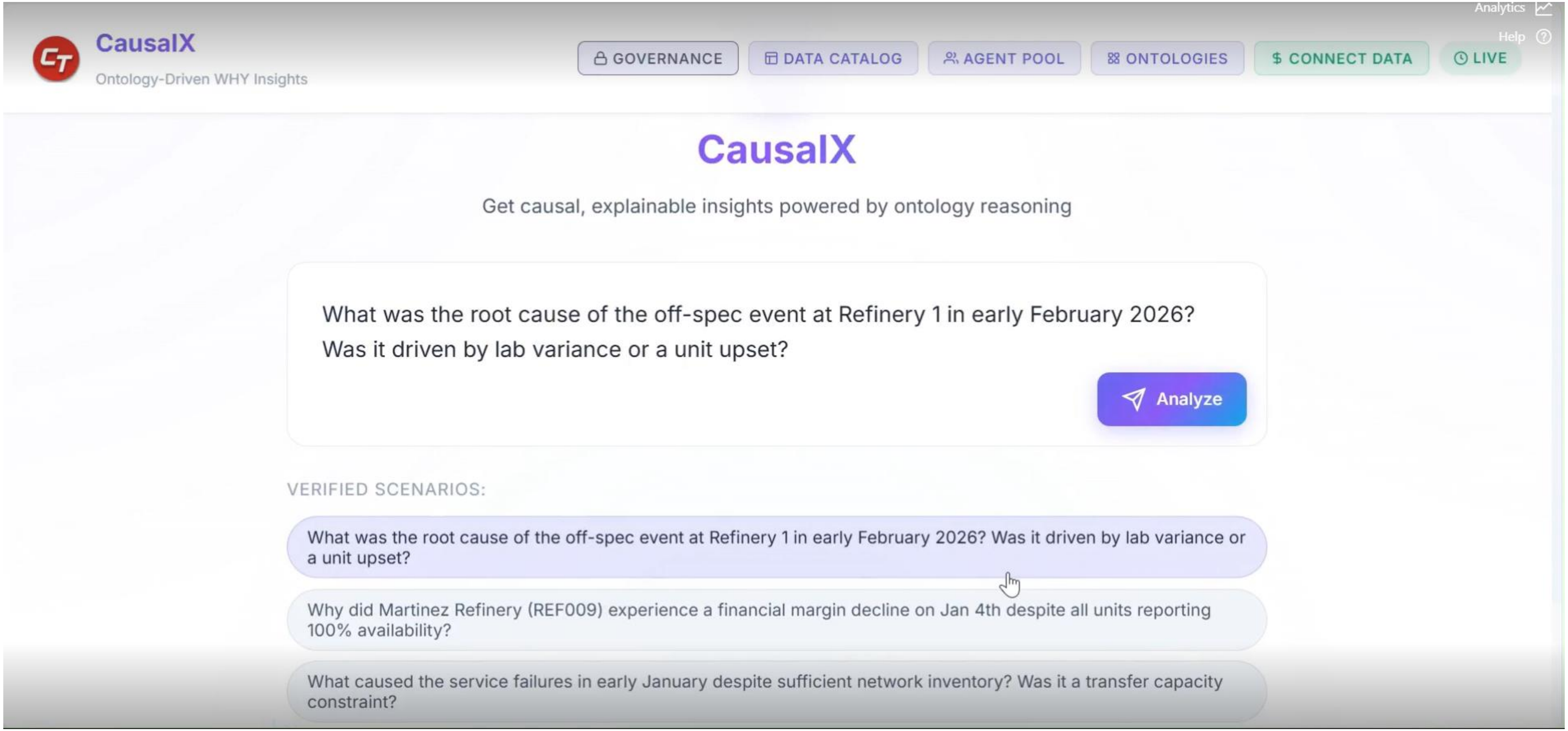

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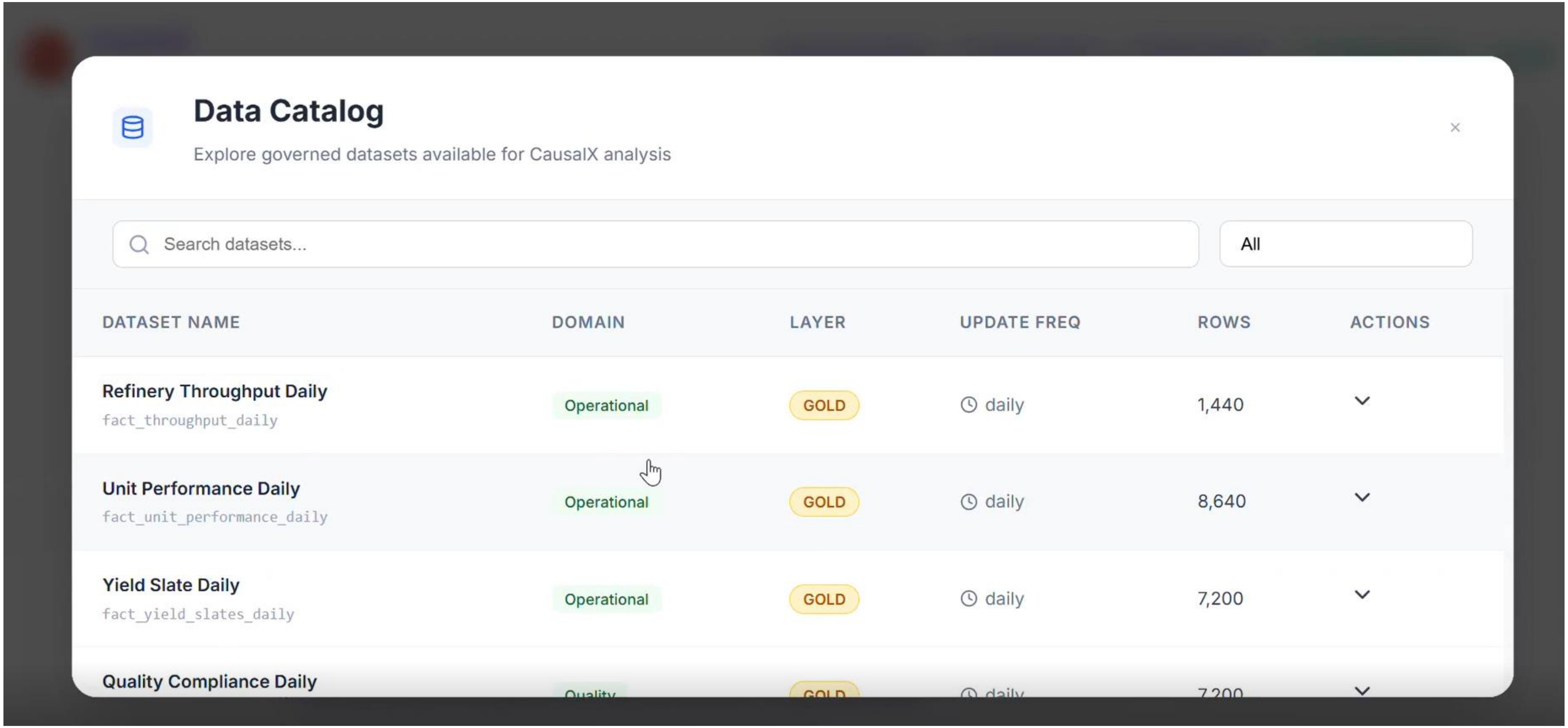

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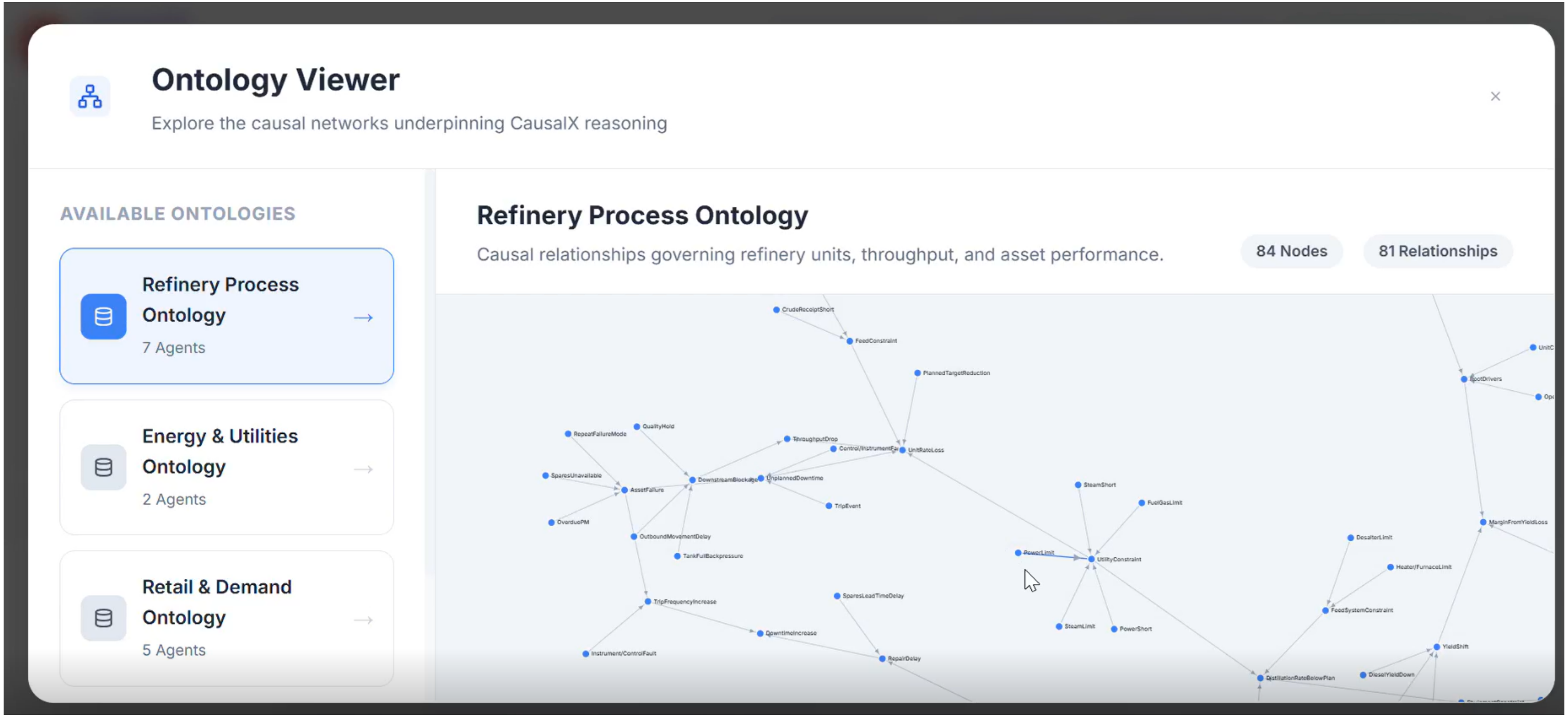

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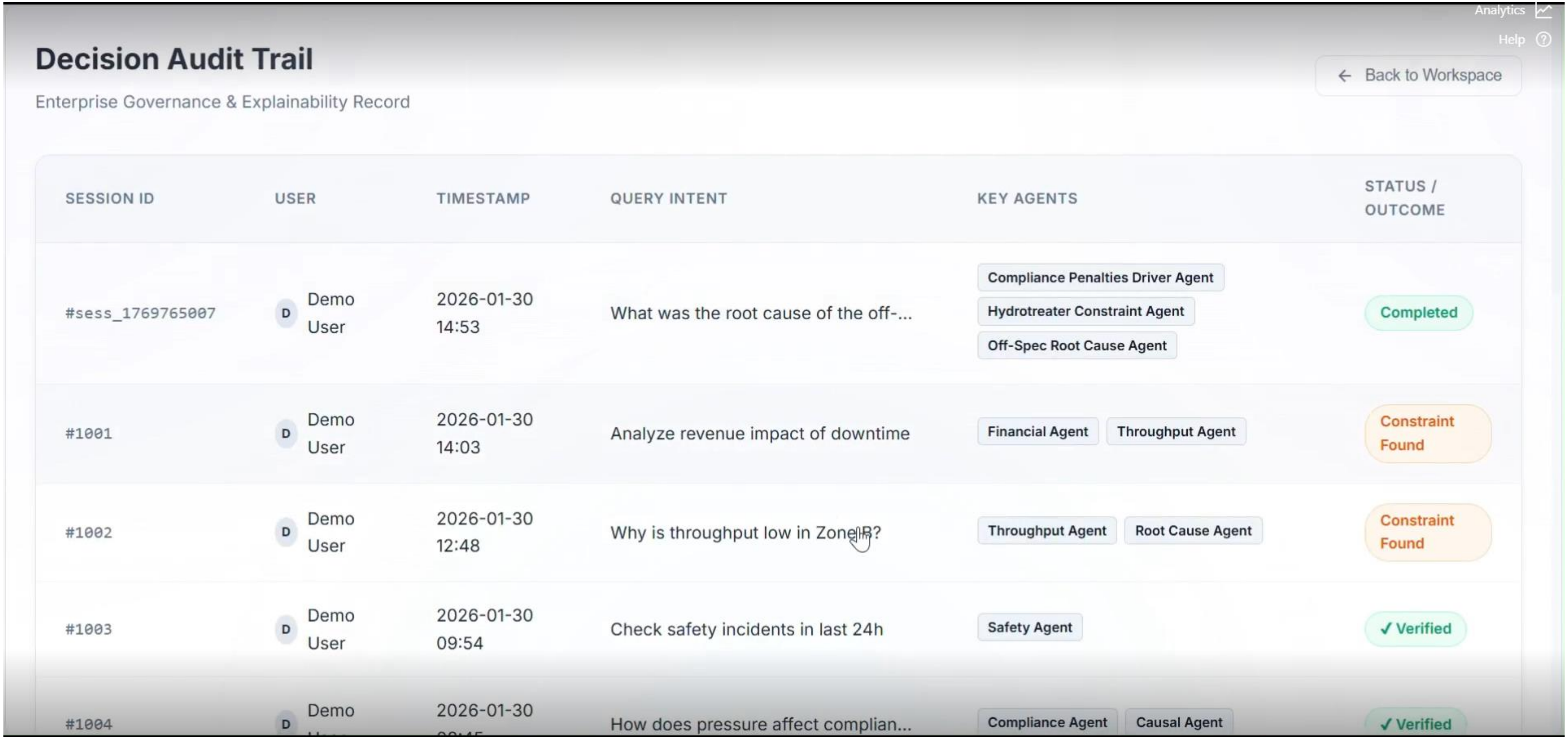


Analytics

Help

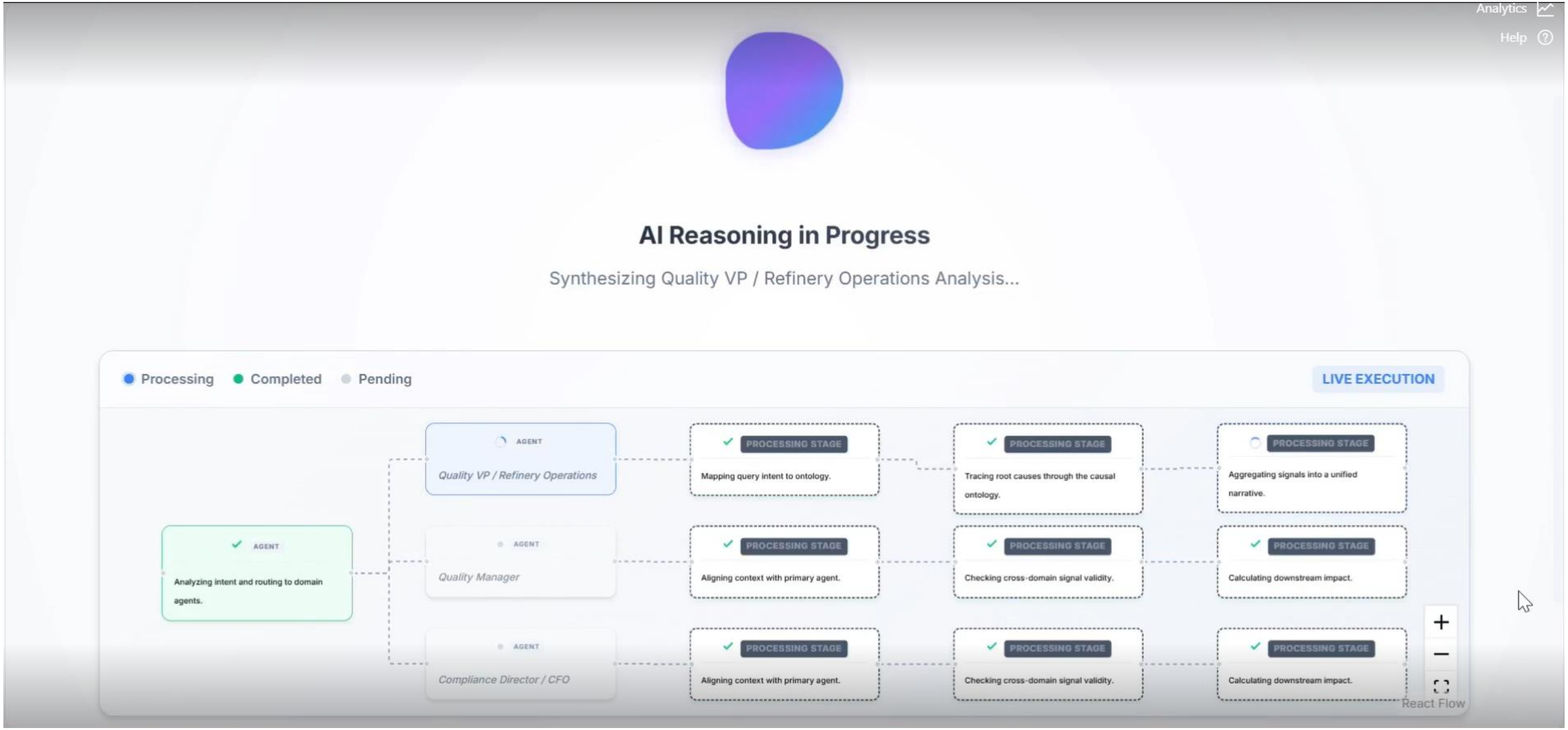
Decision Audit Trail

Enterprise Governance & Explainability Record

← Back to Workspace

SESSION ID	USER	TIMESTAMP	QUERY INTENT	KEY AGENTS	STATUS / OUTCOME
#sess_1769765007	D Demo User	2026-01-30 14:53	What was the root cause of the off-...	Compliance Penalties Driver Agent; Hydrotreater Constraint Agent; Off-Spec Root Cause Agent	Completed
#1001	D Demo User	2026-01-30 14:03	Analyze revenue impact of downtime	Financial Agent; Throughput Agent	Constraint Found
#1002	D Demo User	2026-01-30 12:48	Why is throughput low in Zone B?	Throughput Agent; Root Cause Agent	Constraint Found
#1003	D Demo User	2026-01-30 09:54	Check safety incidents in last 24h	Safety Agent	✓ Verified
#1004	D Demo	2026-01-30	How does pressure affect complian...	Compliance Agent; Causal Agent	✓ Verified

Solution Snippets



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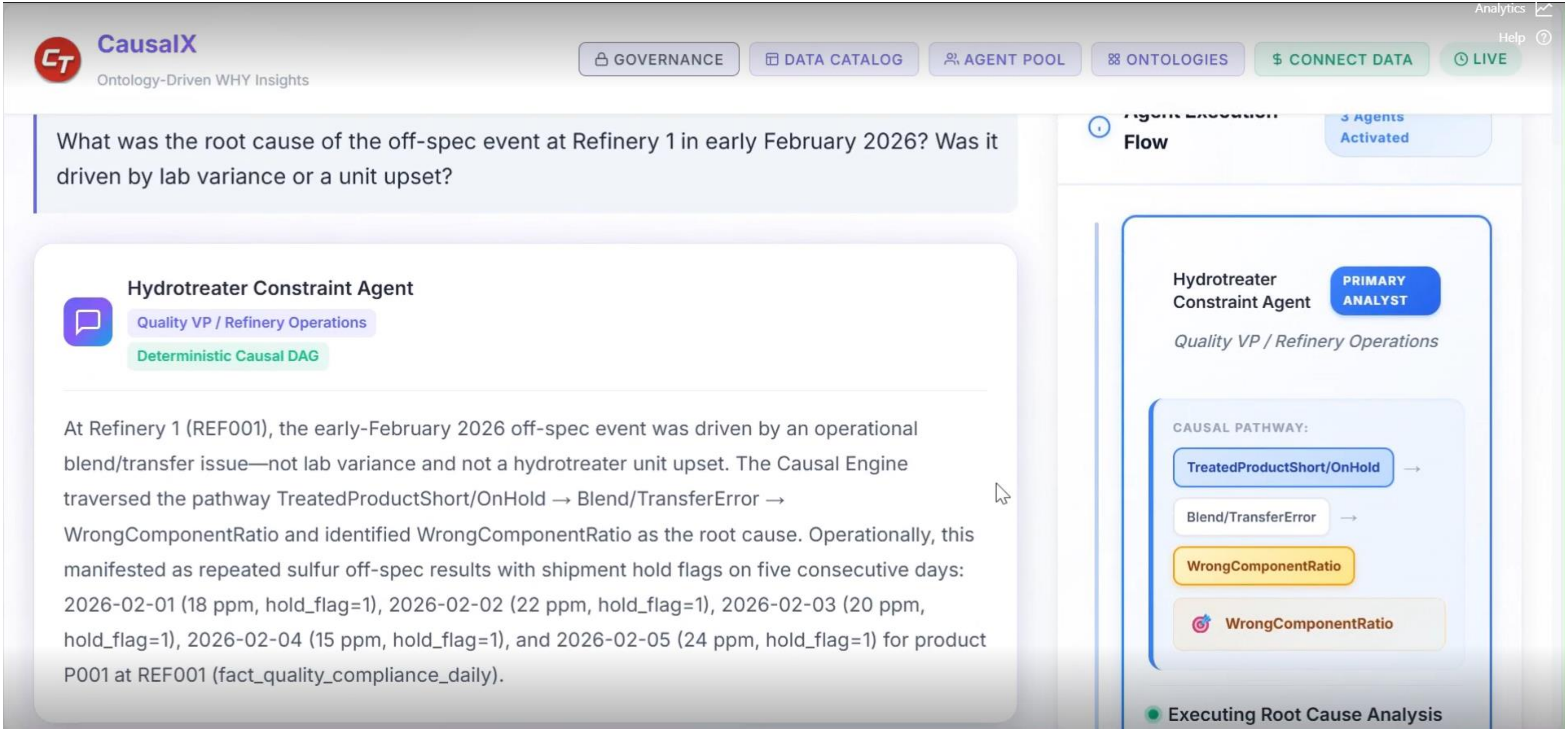

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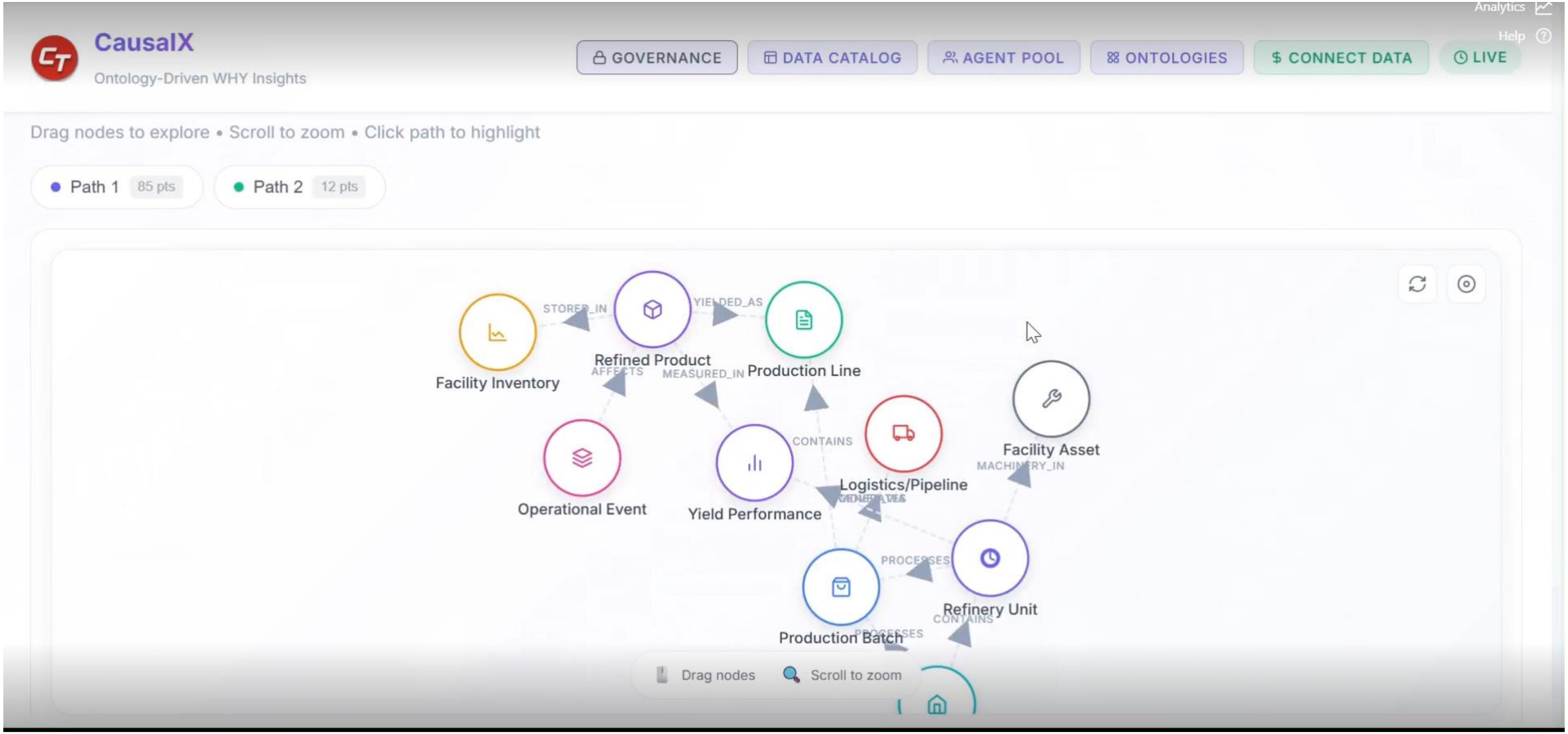

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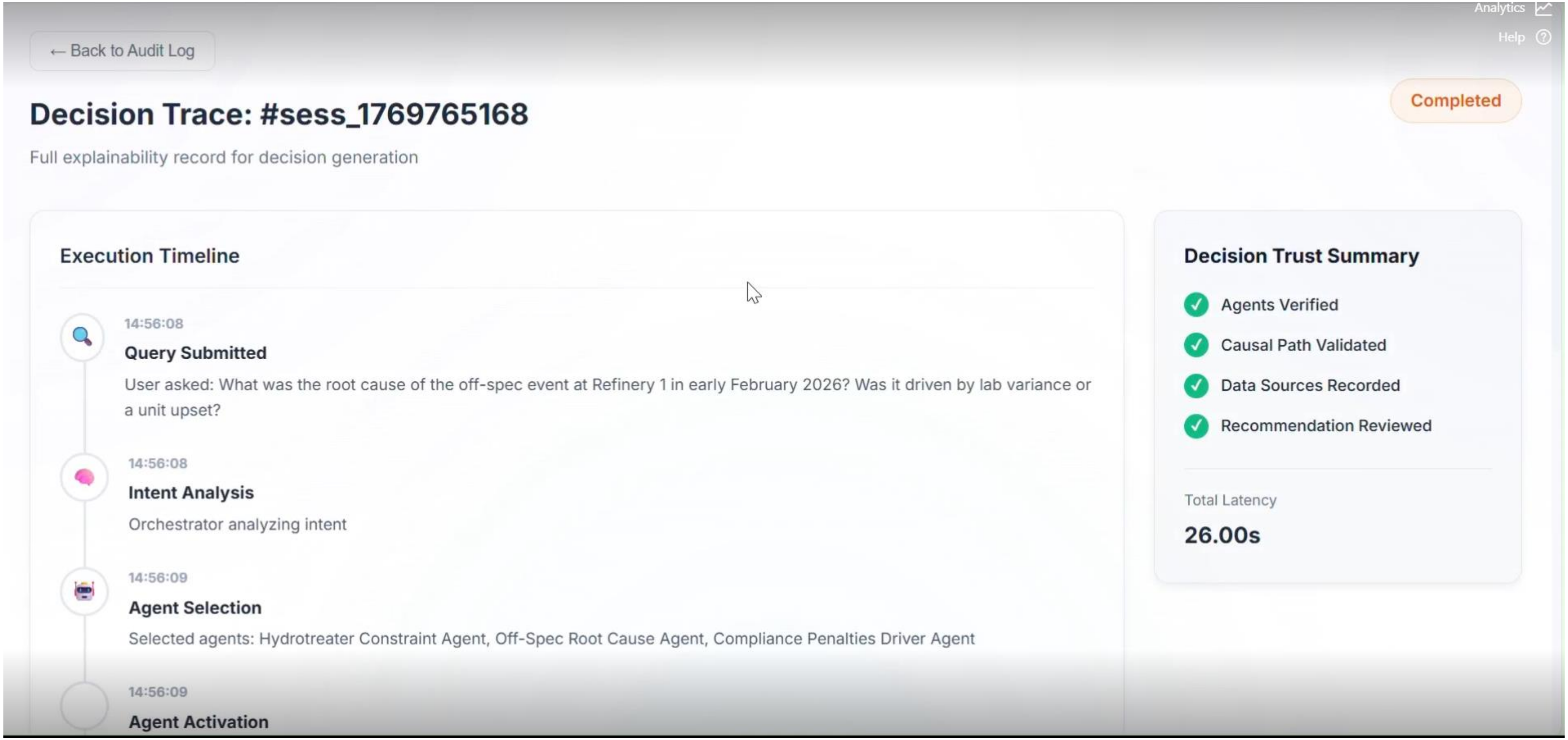

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Thank You