

Data

Cosmos_HypernovaMesh

Unified Data Mesh Hub

Part of the Coforge Data Cosmos™ Platform | Hypernova™ Portfolio

Coforge Limited | Data HBU

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Solution Overview

Data Cosmos_HypernovaMesh is Coforge’s unified data mesh solution artifact that connects siloed enterprise data into domain-intelligent, event-driven, and policy-controlled pipelines with built-in lineage, data contracts, and rapid self-service access. It is an interactive web application providing a comprehensive portal for exploring and managing data mesh implementations on Snowflake and Databricks on Azure — combining visualization tools, governance features, and AI-powered assistance to streamline workflows.

Enterprises today face a fundamental data architecture challenge: critical data assets are fragmented across Operations, Finance, Risk, and other business domains — each with its own pipelines, standards, and access controls. This fragmentation creates trust deficits (unknown lineage, freshness issues), compliance risks (inconsistent audit trails), and operational drag (slow, ticket-driven access that bottlenecks during incidents). HypernovaMesh addresses this by establishing domain-oriented ownership with enterprise-grade unity — enabling each domain to own, publish, and govern its data products while consumers access them through self-service portals with automated policy enforcement.

Challenges Addressed

Challenge	Impact
Data Silos	Critical assets fragmented across Ops, Finance, Risk — no unified view of enterprise data
Trust Deficit	Unknown lineage, freshness issues, and lack of quality scores eroding confidence in data
Compliance Risks	Inconsistent audit trails and manual approvals creating regulatory exposure
Operational Drag	Slow, ticket-driven data access creating bottlenecks during incidents and analysis

Key Features

Feature	Description
Unified Catalog	Rich metadata and business glossary providing a single source of truth for data discovery across all domains
Auto-Access (RBAC/ABAC)	Policy-based role and attribute-based access control removing IT ticketing bottlenecks for self-service data access
Data Contracts	Producer-consumer SLAs defining schema, quality, freshness, and availability expectations between domain teams
End-to-End Lineage	Full traceability across pipelines from source systems through transformations to consumption layers

Event-Driven Sharing	Rapid response mode enabling real-time cross-domain data availability for time-critical analytics
AI Discovery	Semantic search and auto-tagging using GenAI for intelligent data finding and classification
Architecture Visualization	Intuitive interactive exploration of Lakehouse architecture, domain topology, and data flow
AI-Powered Assistant	Navigate documentation, answer domain-specific queries, and provide contextual insights through natural language

Key Benefits

Benefit	Description
Rapid Response	Incident awareness improves from hours to minutes through event-driven data sharing
Democratization	Self-service access removes IT ticketing bottlenecks — analysts access data in minutes, not days
Cost Optimization	Zero-copy sharing eliminates redundant storage and ETL — reducing infrastructure costs
Total Governance	Centralized audit trails aligned with GDPR, HIPAA, and PCI DSS compliance requirements

Technical Stack

Layer	Technology
Frontend	React + Recharts + Lucide React
Build Tool	Vite
AI Integration	Google GenAI SDK / OpenAI
Platform	Snowflake & Databricks on Azure

Industry Applications

Banking & Financial Services

Use Case	Example
Domain-Driven Banking Data Mesh	A Tier-1 bank deploys HypernovaMesh to connect retail banking, corporate banking, risk, and compliance data domains. Each domain publishes data products (customer master, transaction history, risk exposures) with data contracts defining schema, quality, and freshness SLAs. Compliance analysts access cross-domain data through self-service portals with automated RBAC —

	eliminating the 3–5 day IT ticketing process. End-to-end lineage provides BCBS 239 audit trails.
Real-Time Risk Data Sharing	Event-driven sharing enables the risk domain to publish real-time exposure updates consumed by compliance within minutes — improving incident response during market stress from hours to under 15 minutes.

Insurance

Use Case	Example
Unified Claims, Underwriting & Actuarial Mesh	An insurer connects claims, underwriting, and actuarial domains with producer-consumer contracts. Claims data products include standardized loss-type codes; underwriting products include risk scores. Actuarial teams access both through self-service portals with automated lineage for Solvency II and IFRS 17 compliance.
Cross-Domain Fraud Detection	Event-driven sharing enables real-time correlation between claims and underwriting data for fraud pattern detection — reducing investigation time by 40%.

Travel, Transportation & Hospitality

Use Case	Example
Booking, Loyalty & Revenue Data Mesh	A global airline connects booking, loyalty, revenue management, and operations domains. Revenue analysts access cross-domain data for yield optimization without IT tickets. Data contracts ensure booking data freshness (<15 min latency) and loyalty point-balance accuracy.
Disruption Management Intelligence	During flight disruptions, event-driven sharing enables operations, customer service, and rebooking domains to share real-time data — improving passenger rebooking from hours to minutes.

Healthcare & Life Sciences

Use Case	Example
Clinical, Claims & Research Data Mesh	A healthcare provider connects patient, clinical, claims, and research domains with HIPAA-compliant governance. Researchers access de-identified clinical data through self-service portals with automated ABAC policies ensuring PHI protection. Data contracts define freshness for clinical decision support.
Population Health Analytics	Cross-domain data sharing enables correlation of clinical outcomes, social determinants, and claims data for population health programs — without manual data requests.

Target Audience

- Chief Data Officers (CDOs)
- Data Architects
- Domain Data Owners
- Platform Engineering Teams
- Data Governance Teams
- Analytics Leaders

Azure Compatibility

HypernovaMesh supports deployment on Azure Databricks and Snowflake on Azure with integration to Azure Data Lake Storage and Microsoft Purview for governance. Azure, AWS, and GCP platform support is in progress. Part of the Coforge Data Cosmos Hypernova portfolio for greenfield data programs and advanced analytics.