

EDM Webinar

From Experimental to Enterprise: How Semantic Layers Make AI Trustworthy

A conversation with



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ATSCALE



A semantic layer is **a business representation of corporate data that helps end users access data autonomously using common business terms**. A semantic layer maps complex data into familiar business terms such as product, customer, or revenue to offer a unified, consolidated view of data across the organization.

[https://en.wikipedia.org › wiki › Semantic_layer](https://en.wikipedia.org/wiki/Semantic_layer) ⋮

Semantic layer - Wikipedia

The Semantic Layer is now required

Dresner Advisory Services
Publishes Active Data
Architecture Report and
Semantic Layer Market Study



The semantic layer: The foundation of AI accuracy

The Rise Of The Semantic Layer: AI's New Best Friend

One of the most exciting developments I'm seeing is how the semantic layer is becoming the crucial bridge between enterprise data and AI. By semantic layer, I mean a unified layer of business logic that translates raw enterprise data into meaningful and consistent formats, making it accessible for both humans and AI. It serves as a universal translator that helps AI and applications understand business context, bridging the gap between complex technical data and actionable insights.

AI Agents: why your enterprise needs a semantic layer for true intelligence

Opinion By [Peter Anderson](#) published March 31, 2025

How AI agents can transform raw data into strategic foresight

Key Takeaways From The Forrester Wave™: Business Intelligence Platforms, Q2 2025

Semantic Cultivators : The Critical Future Role to Enable AI



Tomasz Tunguz 
Venture Capitalist at Theory

April 30, 2025



Who Needs a Semantic Layer?

Ideal Customer Profile

Enterprise-Grade Data Volume

- Billions / Trillions of rows
- Complex data schema
- Nested dimensions
- Low latency updates
- High cardinality data

Complex Calculations

- 53-week fiscal year calcs
- Period over Period comps
- Retail / Financial Calendars (e.g. 445)
- Multi-Dimensional, Multi-Pass

Diverse Analytics Personas

- From Excel users to autonomous agents—serve all personas from one model
- Support for business analysts, data scientists, and GenAI agents—without rework or duplication

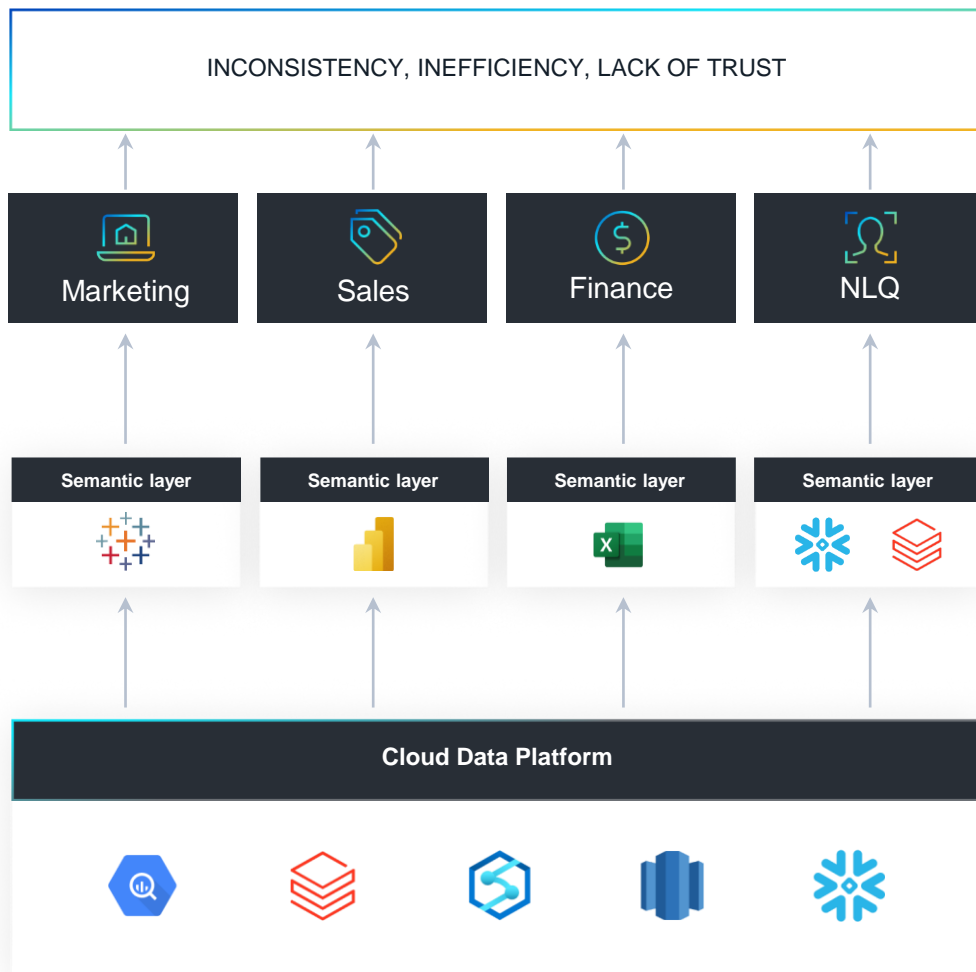
Diverse Consumption Requirements

- Internal consumers
- External consumers (data products)
- DAX, MDX, SQL, MCP, REST, Python
- No compromise experience for Excel and Power BI users

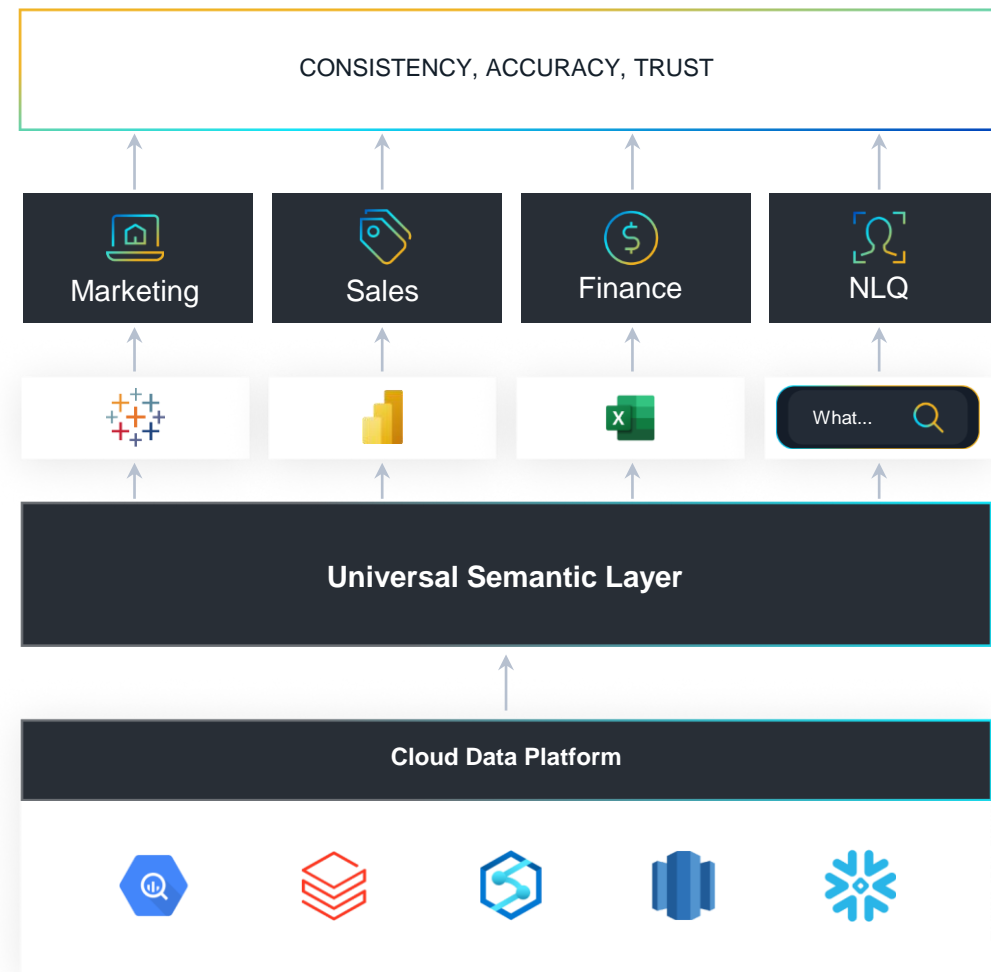


Unified Self-Service Across BI and Gen AI

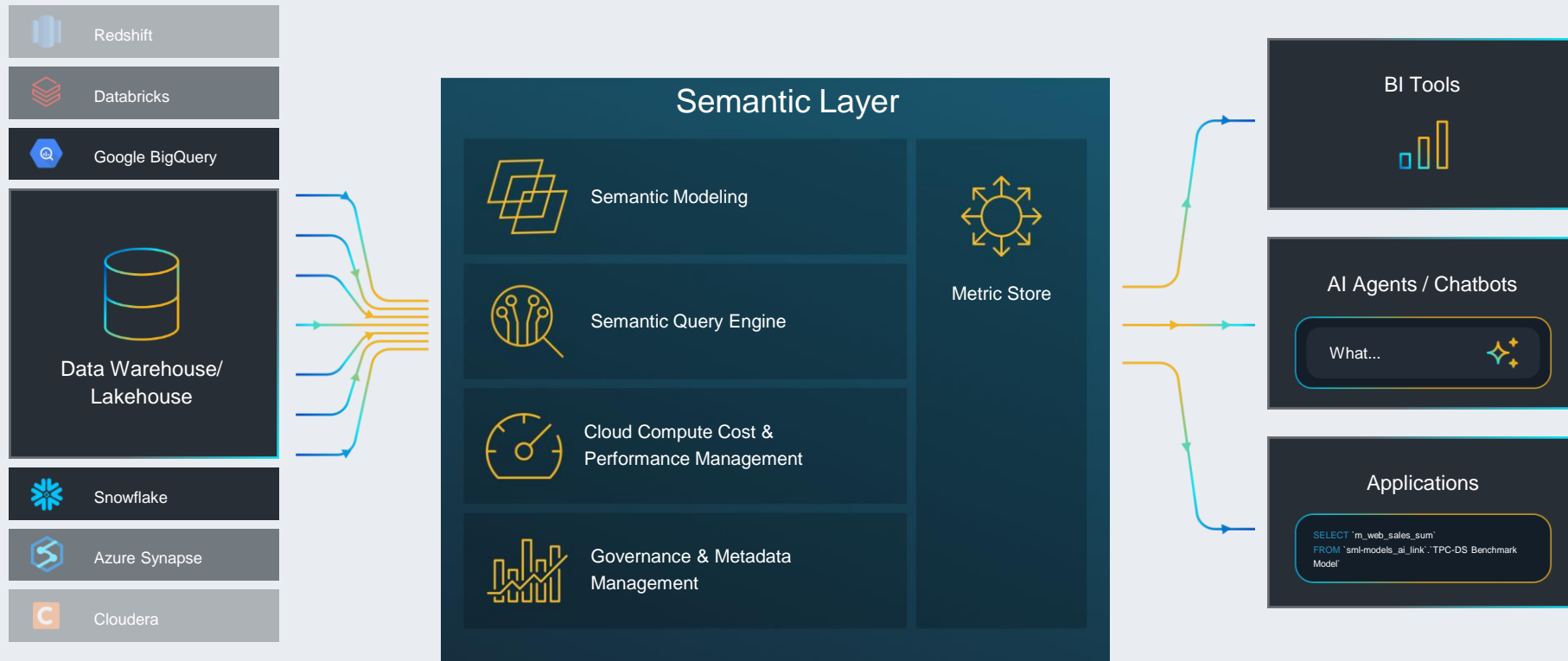
BEFORE



AFTER



Semantic Layer Key Services



Semantic Layers vs. Knowledge Graphs

Category	Semantic Layer	Knowledge Graph
Purpose	Unified analytics & consistent business metrics	Connected, contextual data via relationships
Model	Multidimensional/tabular (measures, dimensions)	Graph-based (nodes, edges, ontologies)
Query Language	SQL, DAX, MDX	SPARQL, Gremlin
Integrations	BI tools (Power BI, Tableau, Looker)	Data sources, ontologies, reasoning engines
Core Functions	Metric definition, caching, virtualization	Ontology management, reasoning, inference
Use Cases	Analytics governance, performance optimization	Data integration, semantic search, AI reasoning
Users	BI developers, analysts, business users	Data engineers, knowledge scientists
Data Flow	Top-down (define metrics)	Bottom-up (discover relationships)
Example Tools	AtScale, dbt Semantic Layer, Cube	Stardog, Neo4j, GraphDB
Output	Reusable metrics & virtual models	Entity relationships & inferred knowledge
Governance	Centralized semantic governance	Ontology-based logical consistency
AI/ML Role	Explainable AI, metric lineage	Semantic context, reasoning for AI



Semantic Layer vs Knowledge Graphs: Better Together

■ Semantic Layer Overview

- Creates a consistent, governed layer for business metrics.
- Translates raw data into accessible business terms.
- Optimizes query performance and enables metric reuse.

■ Knowledge Graph Overview

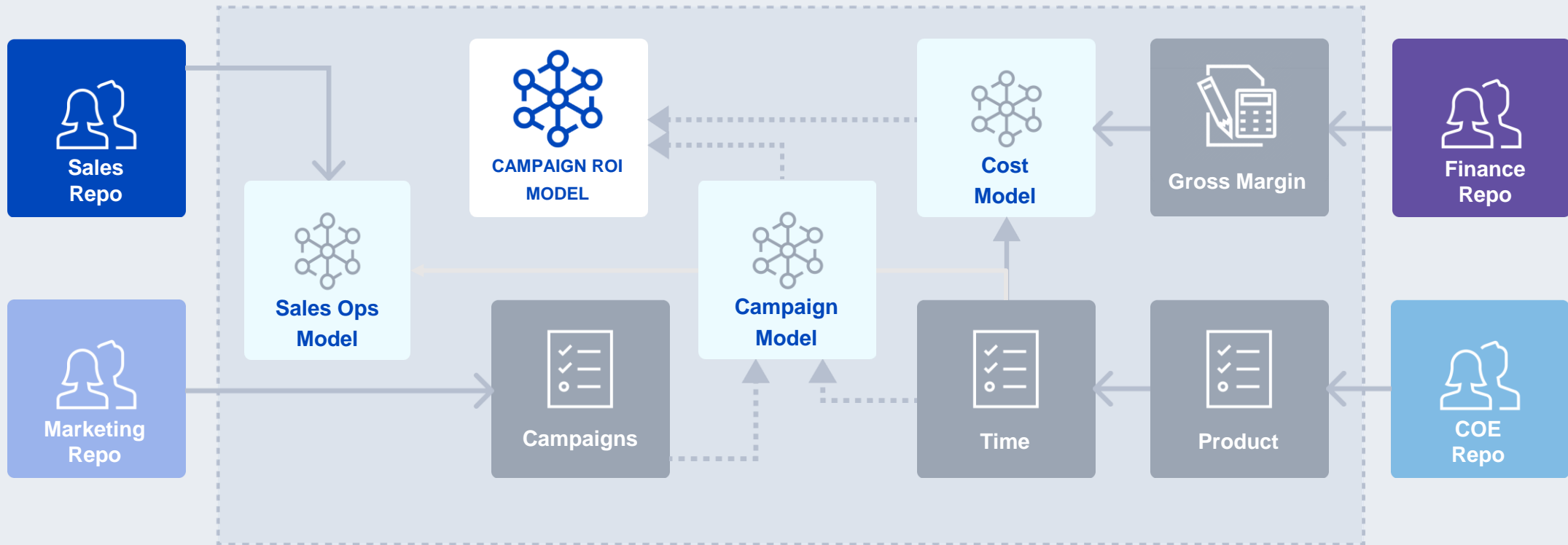
- Represents entities and relationships with semantic richness.
- Enables reasoning, inference, and contextual linking across data domains.
- Powers knowledge-driven AI and semantic data integration.

■ How They Work Together

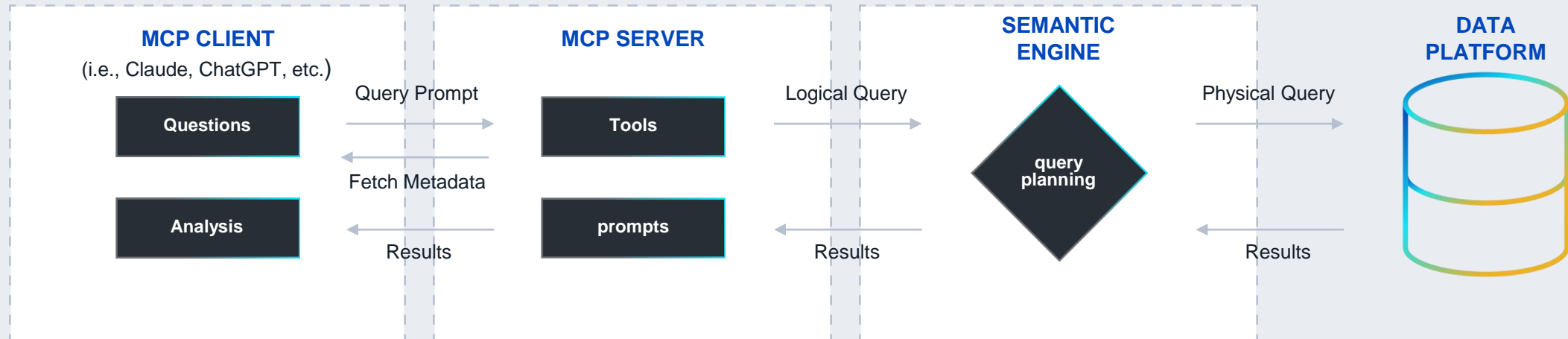
- Semantic Layer: Focuses on what the business measures (e.g., Revenue, Profit, Customer Count).
- Knowledge Graph: Focuses on how data entities relate and infer meaning (e.g., Customer → Purchased → Product).



Hub & Spoke: Composable Analytics



Model Context Protocol (MCP) - Data Integration for LLMs



Demo

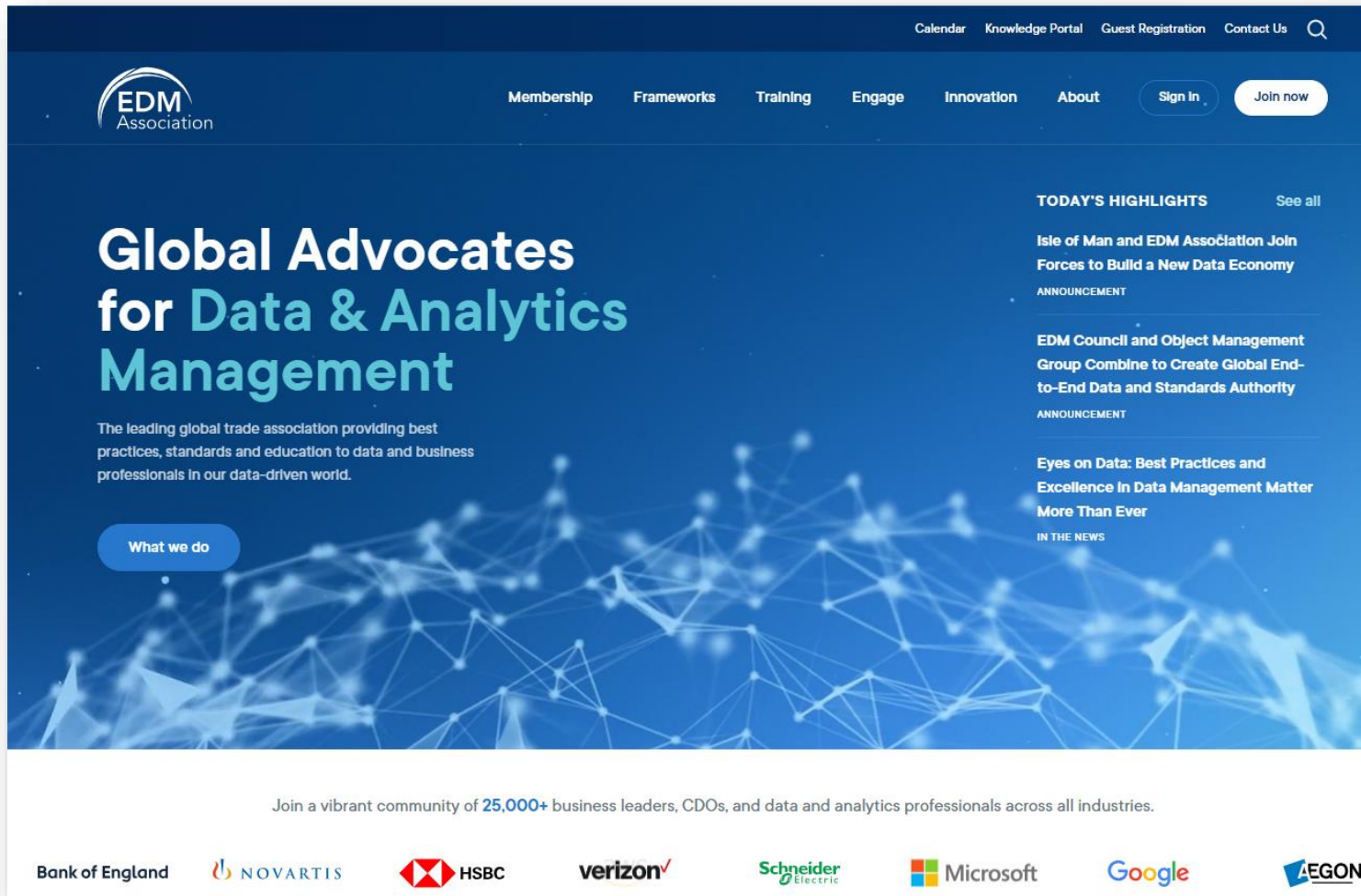


Questions?

A T S C  L E

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(formerly EDM Council)



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