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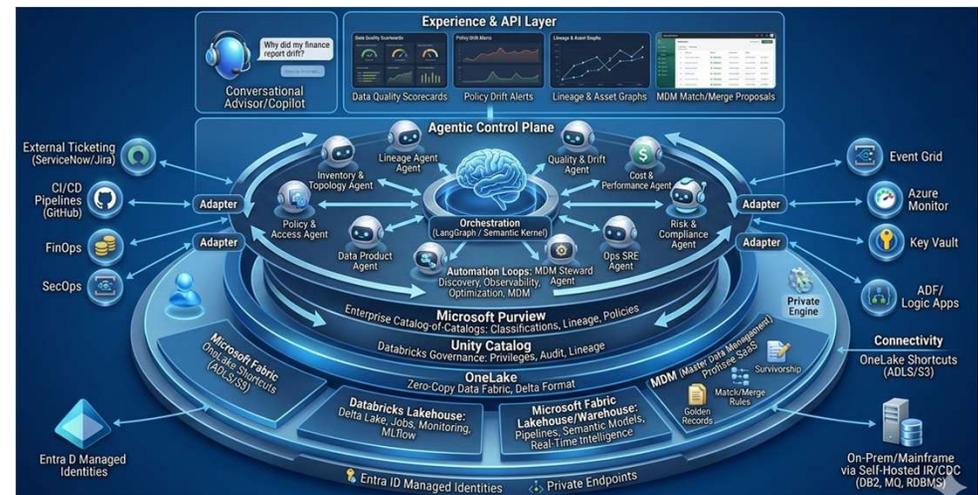
ATLANTA MARCH 16 - 20, 2026

THE AGENTIC ENTERPRISE DATA ESTATE

Intelligent Automation for Microsoft Fabric, Azure Purview & Beyond

AI Foundry · MS Copilot · Databricks · Power BI

Tom Eastlake & Jason Miles | 2026



Presenters



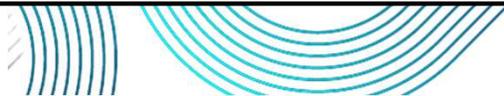
Tom Eastlake

IBM | Associate Partner | Data & AI | Financial Services



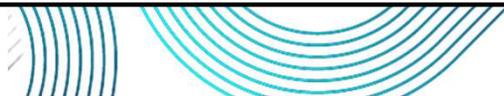
Jason Miles

IBM | Fabric Evangelist | Data & AI | Financial Services



AGENDA

01	The Enterprise Data Estate	Fabric + Purview + Agentic Framework
02	Goals of Intelligent Automation	What we're solving for
03	Current Limitations & Guardrails	What to watch out for
04	Agentic Framework Components	AI Foundry, MS Copilot
05	Platform Integrations	Fabric, Purview, Azure, Power BI, Hybrid
06	Databricks in the Architecture	Where it complements Fabric
07	Roadmap & Future Capabilities	What's coming that changes everything
08	Quantum Horizon	IBM & Microsoft quantum vision



THE ENTERPRISE DATA ESTATE — Centered on Microsoft Fabric + Azure Purview



GOALS OF INTELLIGENT AUTOMATION

What a properly architected agentic data estate delivers

Reduce Time-to-Visibility

Unified metadata, lineage, and DQ scorecards in days — not months. Continuous discovery replaces manual cataloging.

Shift-Left on Governance

Reconcile Purview classifications with Unity Catalog grants automatically. Detect and fix policy drift before it causes incidents.

Improve Reliability & Cost

Proactive drift detection, auto-generated PR fixes, and optimization guidance across Fabric and Databricks workloads.

Accelerate MDM Adoption

Seeded models, match/merge proposals, golden-record propagation back to OneLake and semantic models — with steward approval.

Productized Delivery

MVP in ~90 days with tiered SKUs: Assess, Operate, Optimize, Master. Fixed-fee MVP plus subscription model.

Autonomous Operations

SLA monitoring, ticket creation with repro steps, runbook triggers for retry/fail-forward/quarantine — all auditable.

LIMITATIONS & GUARDRAILS

95%

of AI pilots fail to deliver ROI

80%

encountered risky agent behaviors

15x

more tokens in multi-agent systems

45%

cite speed pressure as governance barrier

KEY LIMITATIONS

- ▶ Hallucination risk — agents can produce confident but wrong outputs; human validation remains essential for high-stakes actions
- ▶ State management complexity — race conditions, context leakage, and memory exhaustion in multi-agent workflows
- ▶ Token cost explosion — multi-agent architectures consume 15x more tokens; budgets and rate limits are non-negotiable
- ▶ Lineage gaps — bespoke scripts that don't emit lineage create blind spots; require standard transforms or SDK instrumentation
- ▶ Double-governance risk — conflicting policies between Purview and Unity Catalog require reconciliation agents and clear ownership

REQUIRED GUARDRAILS

Hard stops before publish/execute · Kill switch capability · Deterministic confirmations for irreversible actions · Escalation paths · OpenTelemetry traces · Rollback triggers

ADEAM: Agentic Control Plane for Microsoft Fabric Data Estate

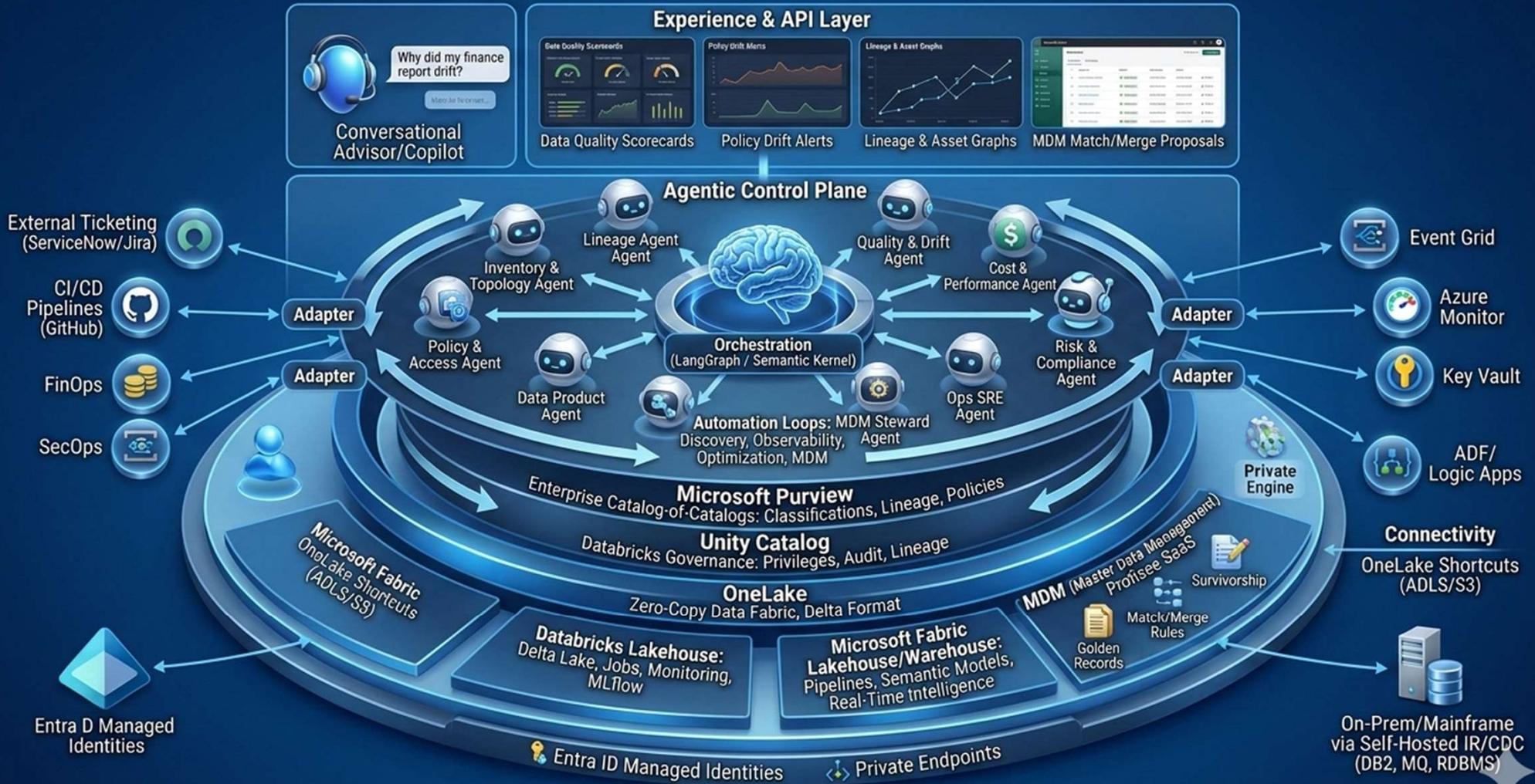


Figure 1: ADEAM Reference Architecture & Data Estate

AGENTIC FRAMEWORK — Orchestrator + Sub-Agent Architecture

EXPERIENCE LAYER

Power BI App · Fabric App · Conversational Copilot · REST APIs · ServiceNow / Jira

LLM BACKENDS

Claude Opus (complex reasoning)
GPT-4o (Copilot / routing)

PLANNER / CRITIC META-AGENT (Orchestrator)

LangGraph / Semantic Kernel · Vector + Graph Stores · Unified Metadata Graph
Task decomposition → Sub-agent dispatch → Output validation → Human-in-the-loop gating

MCP SERVERS

Foundry MCP (cloud-hosted)
Custom MCP endpoints

SPECIALIST SUB-AGENTS (Digital Workers)

Inventory & Topology

Enumerates assets, schemas
PII/PHI tags, owners
Tools: Purview, Unity Catalog

Lineage Agent

End-to-end lineage across
pipelines, SQL, notebooks, BI
Tools: Purview, Fabric Admin

Quality & Drift

DQ expectations, anomaly
detection, auto-fix PRs
Tools: Lakehouse Mon, Fabric DQ

Policy & Access

Reconcile Purview ↔ Unity
GRANT/REVOKE proposals
Tools: Purview, Unity, Key Vault

Cost & Performance

Capacity metrics, compaction
Z-ORDER, materialized views
Tools: Fabric Admin, DBX Jobs

MDM Steward

Match/merge, survivorship
Golden record publishing
Tools: Profisee, OneLake

Ops SRE

SLA monitoring, ticket
creation, runbooks
Tools: Azure Monitor, Events

Advisor / Copilot

Natural language Q&A
"Why" narratives, 1-click fix
Tools: All adapters

TOOL ADAPTERS & MCP CONNECTIONS

Purview API · Unity Catalog API · Fabric Admin · Databricks Jobs · RTI · Azure Monitor · Event Grid · Key Vault · Profisee · ADF · Logic Apps · Functions

AUTOMATION LOOPS

Discovery (Daily/Weekly)

Scan → Classify → Map UMG
→ Publish scorecards & risk register

Observability (Hourly/Stream)

Monitor → Anomaly → Root-cause
→ Propose fix → Gated runbook

Optimization (Continuous)

Telemetry + Cost → Recommendations
→ PR changes → Verify gains

MDM (Business Cadence)

Detect duplicates → Match/Merge
→ Steward approval → Publish golden

GUARDRAILS: Safety Agent · RBAC/ABAC · Kill Switch · Human Checkpoints · Audit Logging · Rollback Triggers

AGENTIC FRAMEWORK – Component Deep Dive

Azure AI Foundry

- ▶ Cloud-hosted MCP Server for secure tool orchestration
- ▶ Foundry Agent Service: persistent agents with tool catalog
- ▶ Entra ID (OAuth 2.0 OBO) scoped to user permissions
- ▶ Supports 1,400+ business system connectors

Open LLM Options

- ▶ Complex multi-step reasoning for data estate analysis
- ▶ Long-context processing for large metadata graphs
- ▶ Nuanced natural-language explanations ('why' narratives)
- ▶ Ideal for Planner/Critic meta-agent orchestration

MS Copilot on Fabric

- ▶ In-line SQL completions and KQL query generation
- ▶ Notebook code generation and pipeline troubleshooting
- ▶ Conversational data exploration across all workloads
- ▶ Now available on all paid Fabric SKUs

LangGraph / Sem. Kernel

- ▶ Graph-based agent workflow orchestration
- ▶ State management with checkpointing for replay
- ▶ Human-in-the-loop gating at critical decision points
- ▶ Supports supervisor, pipeline, and fan-out patterns

MCP (Model Context Protocol)

- ▶ Open standard for AI agent → tool connectivity
- ▶ Foundry MCP Server: cloud-hosted, public endpoint
- ▶ Custom MCP servers via Azure Functions / Container Apps
- ▶ Function calling with tool_choice for deterministic control

Vector + Graph Stores

- ▶ Unified Metadata Graph (UMG) for asset relationships
- ▶ Vector embeddings for semantic similarity search
- ▶ Knowledge graph traversal for lineage reasoning
- ▶ Semantic layer as routing engine for agent retrieval

PLATFORM INTEGRATIONS

Fabric, Purview, Azure, Power BI — and the broader hybrid estate

Microsoft Fabric

- ▶ OneLake unified storage (Delta/Parquet/Iceberg)
- ▶ Data Warehouse with T-SQL + MERGE support
- ▶ Real-Time Intelligence (KQL, Eventstream, MQTT)
- ▶ Data Factory with 200+ connectors
- ▶ Operations Agents (monitor, infer, recommend)
- ▶ OneLake Security: row/column enforcement in preview

Microsoft Purview

- ▶ Unified Catalog: classifications, lineage, policies
- ▶ Data quality scores surfaced in OneLake catalog
- ▶ Sensitivity labels persist across Fabric workloads
- ▶ Governance domains + data products integration
- ▶ Out-of-box governance dashboard for CDOs
- ▶ Federation with Unity Catalog for Databricks

Power BI

- ▶ DirectLake mode for sub-second queries on OneLake
- ▶ Semantic models enriched with ML in Fabric
- ▶ Copilot AI for report generation and exploration
- ▶ DQ scorecards, lineage views, 'why' narratives
- ▶ Embedded governance via Purview classification
- ▶ Real-time dashboards from Eventstream data

Azure & Hybrid

- ▶ Entra ID managed identities; Key Vault for secrets
- ▶ Private endpoints for all data services
- ▶ ADF Self-Hosted IR for on-prem/mainframe (CDC, MQ)
- ▶ Mirroring: SQL Server, Oracle, Snowflake, Cosmos DB
- ▶ OneLake Shortcuts for ADLS, S3, GCS zero-copy
- ▶ Event Grid, Logic Apps, Functions for orchestration

FABRIC + DATABRICKS — Complementary Architecture

Fabric as the overarching estate · Databricks for specialized compute and ML

MICROSOFT FABRIC

Overarching Data Estate Management

OneLake (Unified Storage)

Data Warehouse (T-SQL)

Real-Time Intelligence (KQL)

Data Factory (ETL/ELT)

Power BI (Semantic Models)

Spark Notebooks (PySpark)

FABRIC EXCELS AT:

- ◆ Unified SaaS experience — single capacity billing
- ◆ OneLake as zero-copy data fabric with Shortcuts
- ◆ Power BI semantic models with DirectLake mode
- ◆ Purview-native governance, classification, lineage
- ◆ Real-Time Intelligence (KQL, Eventstream, Activator)
- ◆ Copilot AI across all workloads (all paid SKUs)
- ◆ Business user self-service and governed exploration
- ◆ OneLake Security (unified row/column enforcement)
- ◆ Mirroring from SQL Server, Snowflake, Cosmos DB, Oracle
- ◆ Operations Agents (monitor, infer goals, recommend actions)

DATABRICKS

Specialized Compute & Advanced ML/AI

Unity Catalog (Governance)

Delta Lake (Storage)

Lakehouse Monitoring

MLflow / Model Registry

Jobs / Workflows (DAGs)

Photon Engine (SQL)

DATABRICKS EXCELS AT:

- ◆ Advanced ML/AI model training at scale (GPU clusters)
- ◆ MLflow for full ML lifecycle management
- ◆ Complex Spark workloads with Photon acceleration
- ◆ Lakehouse Monitoring (statistical DQ, drift detection)
- ◆ Unity Catalog workspace-level governance
- ◆ Feature engineering and feature store
- ◆ Streaming with Structured Streaming + Delta Live Tables
- ◆ LLM fine-tuning and vector search (Mosaic)
- ◆ Multi-cloud portability (AWS, Azure, GCP)
- ◆ Serverless SQL warehouses with auto-scaling

BRIDGE

OneLake Shortcuts (zero-copy)
Purview ↔ Unity Catalog federation

DESIGN PRINCIPLE: Use Fabric as the estate manager; use Databricks where specialized compute, ML training, or multi-cloud portability is required

ROADMAP & FUTURE CAPABILITIES

Features on the horizon that will profoundly affect this architecture

OneLake Security GA

Unified row/column security enforced at OneLake level — every Fabric engine respects the same rules. Currently in preview; expected GA in 2026. Eliminates fragmented security across Spark, SQL, KQL, and Power BI.

Fabric IQ (Intelligence Workload)

New first-class Fabric citizen bringing AI/ML capabilities natively into the platform. Expected to become a core workload in 2026, enabling advanced analytics without leaving the Fabric ecosystem.

Operations Agents

Autonomous agents that monitor data, infer goals, and recommend actions — announced at Ignite 2025. Will consume Fabric CU like other workloads. Represents Fabric's native entry into agentic automation.

Foundry MCP Server (Cloud)

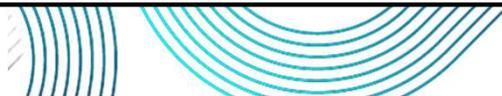
Cloud-hosted MCP server at mcp.ai.azure.com with Entra ID authentication, OBO tokens, and user-scoped permissions. Enables enterprise-grade multi-agent tool orchestration without local infrastructure.

Osmos Acquisition

Microsoft acquired Osmos, an agentic AI data engineering platform. Integration into Fabric will accelerate autonomous data preparation and transformation workflows — turning OneLake data into analytics-ready assets faster.

Spark Autoscale Billing

Pay-as-you-go model for Spark workloads prevents capacity starvation. Heavy Spark jobs burst beyond capacity allocation, protecting other workloads. Game-changer for cost management.



QUANTUM COMPUTING — Timeline to Impact on Data & AI Platforms

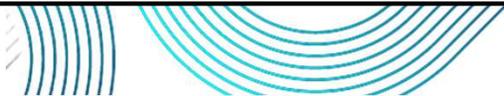
WHERE QUANTUM WILL IMPACT DATA & AI PLATFORMS



THE AI-QUANTUM FLYWHEEL

AI improves quantum (error correction, calibration, circuit optimization)
 Quantum accelerates AI (training speed, feature spaces, optimization)

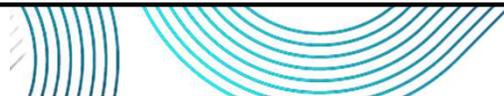
Action: Start post-quantum cryptography planning NOW · Evaluate Azure Quantum experiments · Build quantum-ready architectures



THE FUTURE IS INTELLIGENT & AUTONOMOUS

Digital workers continuously discover, assess, govern, optimize, and remediate your data estate — with human oversight at every critical juncture.

- Start with ONE use case, ONE workflow — validate in 90 days
 - Build evaluation infrastructure and guardrails FIRST
 - Use Fabric as the estate manager; Databricks for specialized ML
 - Begin post-quantum cryptography planning NOW
 - Treat agents like new team members who learn and improve over time
-



Sound off.
The mic is all yours.
Influence the product roadmap.

Join the Fabric User Panel



Share your feedback directly with our
Fabric product group and researchers.

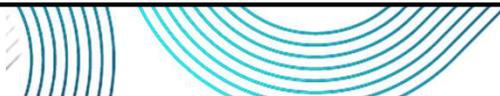
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Influence our SQL roadmap and ensure
it meets your real-life needs

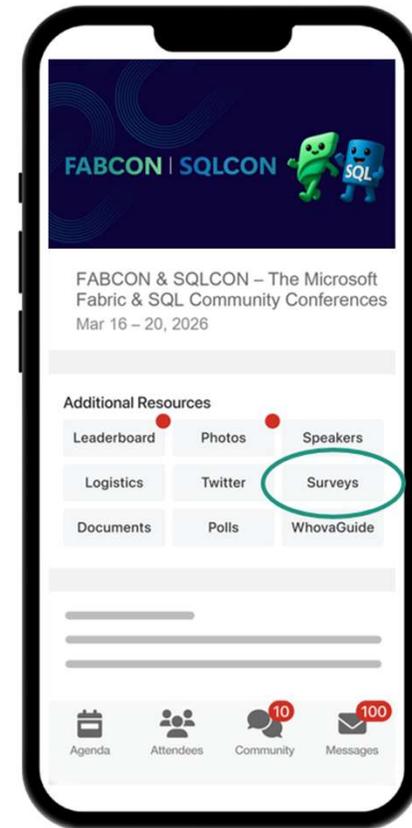
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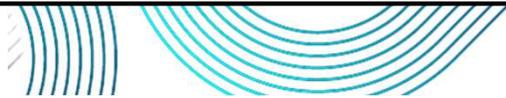
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