

#FABCONSQLCON2026

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ATLANTA MARCH 16 - 20, 2026



Making AI Agents Smarter with Fabric IQ & Foundry IQ

Treb Gatte | Marquee Insights

Microsoft Data Platform / AI Platform MVP

Session Agenda

3 Demos | 300-Level Technical Depth



0-10 min

The Problem & Microsoft IQ Intelligence Layer



10-20 min

Fabric IQ Deep Dive: Ontology, Graph, Agents



20-30 min

DEMO 1: Build Ontology from Power BI + Eventhouse



30-42 min

Foundry IQ: Agentic Retrieval & Python SDK



42-48 min

DEMO 2: Knowledge Base + Agent Framework Code



48-55 min

DEMO 3: End-to-End Agent + Ontology + KB



55-60 min

Agent Factory, Architecture, Resources, Q&A

Why AI Agents Fail Today

Agents don't fail for lack of data — they fail for lack of meaning.



Fragmented Data

Every team rebuilds RAG pipelines, chunking logic, and embeddings from scratch



No Business Context

Agents see tables and columns, not business entities, relationships, and rules



Security Gaps

Homegrown pipelines lack consistent access control and governance



Semantic Drift

Each department defines 'Customer' or 'Revenue' differently — agents inherit the confusion

Microsoft IQ Intelligence Layer

Universal context for every agent — from productivity signals to business data to enterprise knowledge



Work IQ Microsoft 365

Organizational signals from emails, chats, documents, meetings, and workflows.

Powers M365 Copilot with user-specific and org-specific context through an AI feedback loop.



Fabric IQ Microsoft Fabric

Ontology + Graph + Semantic Models over OneLake. Defines business entities, relationships, rules, and actions.

Turns data into operational intelligence that agents can reason over.



Foundry IQ Microsoft Foundry

Knowledge bases with agentic retrieval built on Azure AI Search. Single API for multi-source RAG.

Automatic indexing, vectorization, query planning, and permission enforcement.

Fabric IQ: Data Platform to Intelligence Platform

Fabric IQ is a workload in Microsoft Fabric that organizes data in OneLake according to the language of your business, then exposes it to analytics, AI agents, and applications with consistent semantic meaning.



Ontology (Preview)

Define entity types, properties, relationships, rules, and bind them to real OneLake data



Graph (Preview)

Native labeled property graph with GQL support for multi-hop reasoning and impact analysis



Data Agent

Natural language Q&A grounded in ontology — agents understand business terms, not raw columns



Operations Agent

Monitors real-time data, evaluates business rules, and triggers autonomous actions



Power BI Semantic Model

Bootstrap ontologies from existing BI models — your investment carries forward

Ontology Deep Dive: Core Concepts

Entity Types	Reusable model of a real-world concept (Shipment, Product, Sensor) — standardizes naming across teams
Properties	Named facts with declared data types, semantic annotations, and quality checks
Relationships	Typed, directional links between entities with cardinality rules (Customer → Orders)
Data Bindings	Connect definitions to lakehouse tables, eventhouse streams, and Power BI semantic models
Rules & Constraints	Business rules that agents evaluate — turning tacit knowledge into automated operations

Key Benefits

- ✓ No-code visual tools for business experts
- ✓ Bootstrap from existing Power BI models
- ✓ Governed: IT secures, versions, and approves
- ✓ AI-ready grounding for all agent types
- ✓ Cross-domain reasoning via graph traversal
- ✓ No additional licensing fees

Operations Agent uses these as **playbook triggers** for autonomous action.

Ontology Technical: Data Binding & Graph Queries

Data Binding Architecture

Supported Sources (See prerequisites):

OneLake tables

Eventhouse streams (KQL)

Binding Process:

1. Define entity type + properties
2. Select source table/stream
3. Map columns to properties
4. Set identity keys for instances
5. Configure relationship keys
6. Refresh graph model

Predicates push down to native engines.

GQL Graph Query Examples

Cold-chain risk analysis:

Order > Route > Asset > Sensor

Influence path discovery:

Customer > Household > Product

Predictive maintenance:

Well > Compressor > Sensor > WorkOrder

Fraud detection:

Customer > 3x transaction increase within
2 hops of prior fraud alerts

Key: GQL for graph, KQL for streams.

Ontology orchestrates federated plans.

DEMO 1



Build an Ontology from Power BI Semantic Model

1. Generate ontology from RetailSalesModel — auto-creates Store, Product, SaleEvent
2. Walk through entity types, properties, and auto-mapped relationships
3. Add Freezer entity type — bind FreezerTelemetry from Eventhouse KQL
4. Define cross-source relationship: Store operates Freezer
5. Preview entity instances — show time-series freezer data through ontology
6. Query graph: 'Show all freezers in Paris store' (StoreId = S-PAR-01)
7. Data Agent NL query: 'Top product by revenue across all stores?'

Demo 1: Technical Details & What to Watch For

Semantic Model → Ontology Mapping

- Tables become entity types.
- Columns become properties.
- DAX relationships become ontology relationships with cardinality.
- Measures are NOT imported — ontology focuses on structural semantics.

Cross-Engine Data Binding (Key Technical Differentiator)

- Freezer entity pulls identity from lakehouse (static metadata) and time-series from Eventhouse (KQL).
- Data binding: “Integrate without copying source data” + requirement that data be prepared and in Fabric

Graph Model Refresh

- Schema changes trigger automatic reingestion (Preview limitation) but the instance data updates requires a manual or scheduled refresh, once bindings are configured.

Query Pushdown

- Ontology experience uses Graph (GQL) and KQL/Eventhouse
- Graph query builder + “Open in Fabric Graph”;
- OneLake-native graph analytics

Graph Queries & Operations Agent Playbooks

Operations Agent Playbook:

- Rules = ontology constraints
- Streams = Eventhouse data
- Actions = alerts, workflows

Example:

- If freezer temp > 5C for > 10 min -> Alert manager
- If temp > 8C -> Emergency workflow

The ontology IS the playbook.

Graph Query Patterns:

- Query builder: Add filter, toggle nodes/edges, run, refine.

Example:

- Show stores with freezer temp > threshold AND revenue > 150

Data Agent NL:

- Agent resolves terms through ontology. 'Revenue' maps to SaleEvent.TotalAmount.

Graph Queries & Operations Agent Playbooks

Graph Query Patterns

Query Builder (no-code):

Add filter > Toggle nodes/edges

Run query > Inspect results > Refine

Demo query:

Show stores with freezer temp > threshold

AND sales revenue > 150

Data Agent NL queries:

Agent resolves terms through ontology.

'Revenue' maps to SaleEvent.TotalAmount

via property binding. No SQL needed.

Data agent supports instructions and example queries

Operations Agent Playbook

Playbook = ontology rules + actions:

Rules = business constraints

Streams = Eventhouse data

Actions = alerts, workflows, updates

Thresholds = human-in-the-loop gates

Supply chain example:

If freezer temp > 5°C for > 10 min

→ Alert store manager + log incident

If temp > 8°C → Emergency workflow

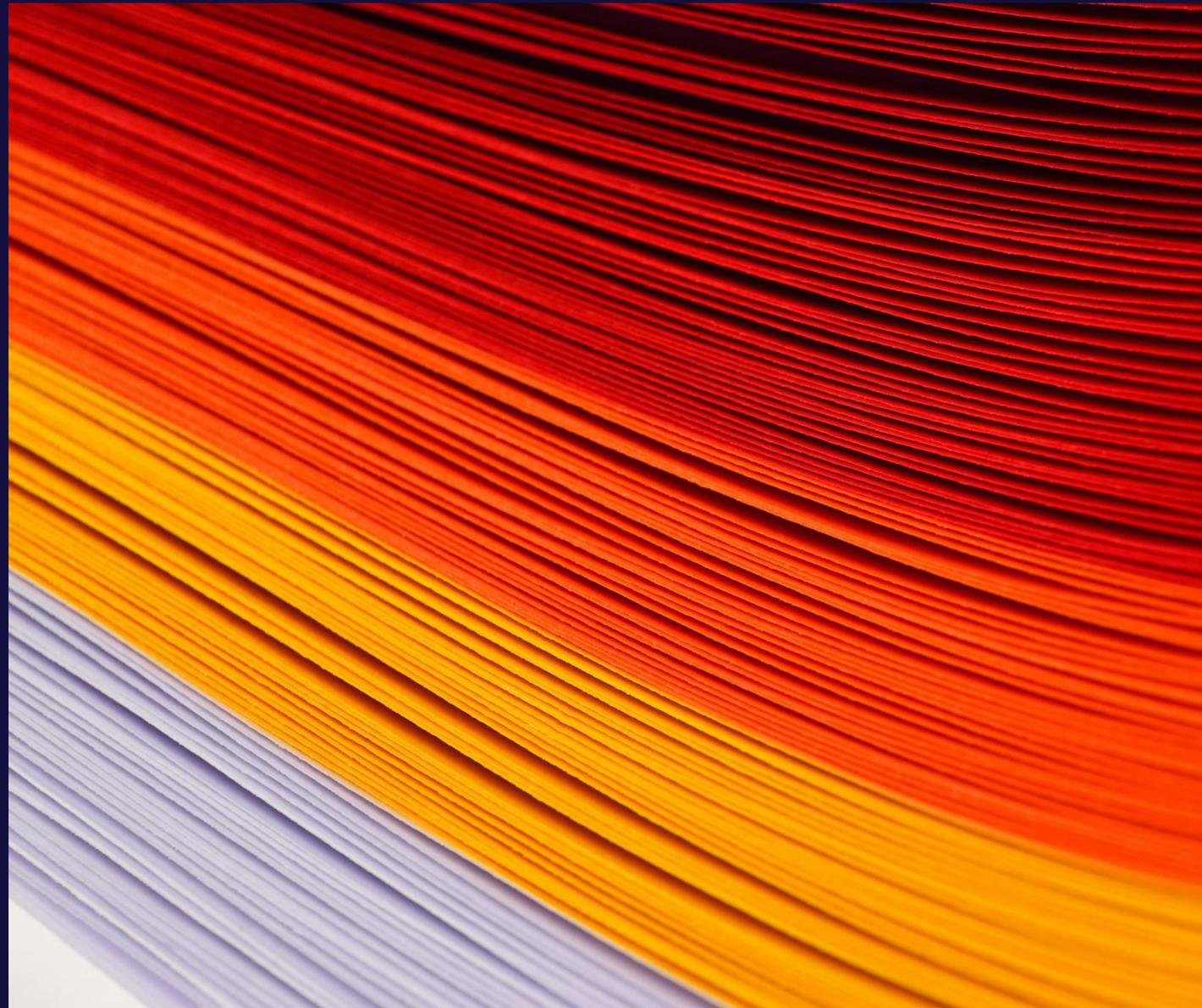
Data Agent = reactive Q&A

Operations Agent = proactive action

Both share the same ontology grounding.

Foundry IQ: The Knowledge Layer for Agents

Built on Azure AI Search — a unified knowledge layer that replaces custom RAG pipelines with reusable, permission-aware knowledge bases accessible through a single API.



Knowledge Bases - Topic-centric collections. Define once, connect many agents.

- Auto indexing, vectorization, enrichment for text, images, complex documents.

Agentic Retrieval - LLM plans multi-step queries, selects sources, iterates.

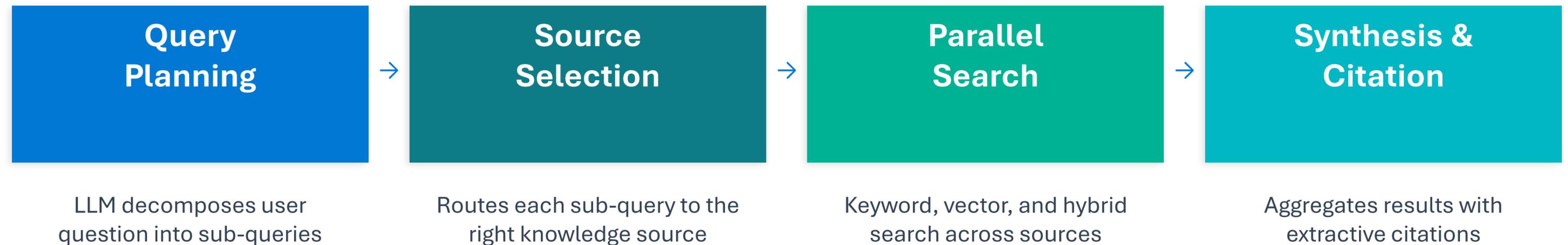
- Configurable 'retrieval reasoning effort' parameter. Uses keyword/vector/hybrid search + semantic reranking.

Enterprise Security - Entra ID identity, document-level ACLs, Purview labels.

- Queries run under caller identity. Different users get different results.

Agentic Retrieval: How Foundry IQ Thinks

Traditional RAG uses single-shot retrieval. Agentic retrieval uses an LLM to plan, search, iterate, and synthesize. Tokens used in planning + execution = metered cost.



Agentic Retrieval: How Foundry IQ Thinks

Classic RAG vs. Agentic Retrieval

	Classic RAG	Foundry IQ Agentic
Query Strategy	Single-shot embed + search	LLM plans multi-step queries
Source Routing	Manual per-pipeline	Automatic across KB
Security	Custom ACL logic	Entra ID + Purview built-in
Reusability	One pipeline per agent	One KB → many agents

DEMO 2



Create Knowledge Base + Python SDK Integration

1. Open Foundry portal → Create project → Build → Create Knowledge Base
2. Add knowledge sources: SharePoint document library + Azure Blob Storage
3. Configure retrieval reasoning effort (minimal /low/ medium)
4. Test in playground: 'What is our return policy for damaged items?'
5. Show query diagnostics: query plan, sub-queries, source routing
6. Python SDK: ~20 lines — AIProjectClient, create_agent, threads
7. MCP endpoint: {search_endpoint}/knowledgebases/{name}/mcp

⌄ Demo 2: Python SDK & MCP Configuration

Azure AI Search Context Provider (~20 lines of Python):

```
from azure.ai.projects import AIProjectClient
from azure.identity import DefaultAzureCredential
client = AIProjectClient(endpoint, DefaultAzureCredential())
agent = client.agents.create_agent(model='gpt-4.1-mini', tools=[kb_tool])
thread = client.agents.threads.create()
run = client.agents.runs.create_and_process(thread_id, agent_id)
```

MCP Tool Configuration:

```
server_url: '{endpoint}/knowledgebases/{name}/mcp?api-version=2025-11-01-preview'
allowed_tools: ['knowledge_base_retrieve']
require_approval: 'never'
```

Note: Per-user auth uses Azure OpenAI Responses API (not MCP headers in Preview).

Prerequisites: Azure AI Search (Standard+), Foundry project, Python 3.10+



Connecting Agents to Multiple Data Sources

Fabric IQ — Ontology Sources

(Structured / Operational Data)

- ✓ Lakehouse Tables (Delta Lake)
- ✓ Eventhouse Streams (KQL)

Ontology unifies all under entities.

No additional Fabric SKU, but consumption applies

Foundry IQ — Knowledge Sources

(Unstructured / Document Data)

Indexed (auto-vectorized):

- ✓ Microsoft SharePoint
- ✓ Azure Blob Storage
- ✓ Fabric OneLake files

Federated (queried remotely):

- ✓ Public Web content
- ✓ MCP Servers (Private Preview)
- ✓ Work IQ signals (M365)

One KB, one API, many agents.

Security, Permissions & Governance



Microsoft Entra ID: End-to-End Identity Enforcement

Queries execute under the caller's Entra identity. Agents return only authorized content. Managed identities for service-to-service. Search Index Data Reader role on search service.



Microsoft Purview: Sensitivity Labels

Labels travel with documents from source through indexing to query results. Foundry IQ respects labels at query time. Classification and compliance without custom code.



Document-Level ACLs

Access control lists synchronized from supported sources. Permissions enforced per-document, not per-index. Different users, same KB, different results.



Ontology Governance (Fabric IQ)

Version definitions. Validate schema changes before publishing. Monitor health via Fabric monitoring tools. IT secures and approves; business enriches meaning.



OneLake Security (Preview)

Security rules enforced at the data layer regardless of which engine (Spark, SQL, KQL, Power BI) accesses the data.

DEMO 3



End-to-End Agent with Ontology + Knowledge Base

1. Create Data Agent in Fabric → connect to ontology → add custom instructions
2. NL query: 'Which stores had freezer temperature breaches?' → graph traversal
3. Create Foundry Agent → connect to knowledge base → MCP tool
4. Show agentic retrieval: multi-step reasoning with extractive citations
5. Permission-aware: User A (store mgr) vs. User B (director) → different results
6. Same agent, same KB, same ontology — Entra ID enforces at query time
7. Deployment: M365 via Agent 365 integration

Agent Integration Patterns

Pattern 1: Fabric Data Agent + Ontology

Standalone Fabric item. Custom instructions + example queries.

Deploy to Teams, Copilot Studio, or custom apps.

Unlike Copilot, Data Agents have personalized context.

Pattern 2: Foundry Agent + Knowledge Base (MCP)

```
tools=[{type:'mcp', server_url:'{endpoint}/knowledgebases/{name}/mcp', allowed_tools:['knowledge_base_retrieve']}]
```

Agent instructions: 'Always provide annotations using MCP tool and render as citations.'

Pattern 3: Multi-Agent with Microsoft Agent Framework

Orchestrate specialist agents: one grounded in ontology (structured), one in KB (documents), one for actions (Power Automate).
Unified AutoGen + Semantic Kernel.

Pattern 4: Hosted Agents in Foundry

Deploy custom-code agents to managed runtime.

No K8s.

Bring Agent Framework, LangGraph, or CrewAI.

Auto-scaling, monitoring, identity built in.

☰ Operations Agent: From Insights to Autonomous Action

Operations Agents continuously monitor, reason, and act in real time.



Supply Chain Example:

Ontology models: Routes, Trucks, Warehouses, Sensors, Deliveries.

Rule: If congestion data shows route delay > 30 min → Reroute trucks, notify warehouse, update delivery ETAs.

Context: Graph traversal identifies which deliveries are affected downstream.

Data Agent = reactive Q&A. Operations Agent = proactive autonomous action.

Both share the same ontology grounding for consistent business understanding.

Microsoft Agent Factory

A single program to move from experimentation to execution — build, deploy, and scale AI agents



Agent Pre-Purchase Plan (P3)

One metered plan with Agent Commit Units (ACUs).

Use flexibly across Copilot Studio + Microsoft Foundry.

1-year commitment. No upfront licensing. Simplifies procurement for multi-agent deployments.



Forward Deployed Engineers (FDEs)

Microsoft AI engineers embedded with your team.

Deep expertise in IQ technologies.

Co-innovate on production-grade solutions. Rapid prototyping to deployment.



AI Fluency Training

Tailored learning plans aligned to business goals.

Live instructor-led sessions and webinars.

Role-based: executives, developers, data professionals. Upskill the entire workforce.

Architecture: Putting It All Together

USER SURFACES

Microsoft 365 | Teams | Custom Apps | Power Apps | Web

AGENT RUNTIME

Foundry Agent Service | Microsoft Agent Framework | Copilot Studio | Agent 365

FOUNDRY IQ — KNOWLEDGE

Knowledge Bases → Agentic Retrieval → Entra ID ACLs → Purview Labels → MCP

FABRIC IQ — SEMANTIC

Ontology → Graph (GQL) → Business Rules → Semantic Models → Operations Agent

DATA SOURCES

OneLake | Lakehouse | Eventhouse | Mirrored DBs | SharePoint | Blob | SAP | Web

No additional Fabric licensing SKU for IQ (CUs apply). Azure AI Search required for Foundry IQ. Agent Factory P3 for unified metered pricing.

Resources & Links

Documentation

Fabric IQ Overview

learn.microsoft.com/en-us/fabric/iq/overview

Foundry IQ Overview

learn.microsoft.com/en-us/azure/foundry/agents/concepts/what-is-foundry-iq

Ontology Overview

learn.microsoft.com/en-us/fabric/iq/ontology/overview

Tutorials & Hands-On

Ontology Tutorial (Lakeshore Retail)

learn.microsoft.com/en-us/fabric/iq/ontology/tutorial-0-introduction

Agentic Retrieval Tutorial

learn.microsoft.com/en-us/azure/ai-services/agents/tutorials/agentic-retrieval

Connect Agent to KB

learn.microsoft.com/en-us/azure/foundry/agents/how-to/tools/knowledge-retrieval

Solution Accelerator

microsoft.github.io/agentic-applications-for-unified-data-foundation-solution-accelerator

Blog Posts & Sessions

Fabric IQ Blog (Ignite 2025)

blog.fabric.microsoft.com/.../introducing-microsoft-fabric-iq

Foundry IQ Tech Community

techcommunity.microsoft.com/.../foundry-iq-unlocking-ubiquitous-knowledge

Ignite Session BRK196

ignite.microsoft.com/en-US/sessions/BRK196

Agent Factory

techcommunity.microsoft.com/.../introducing-microsoft-agent-factory



Questions & Discussion

1. Fabric IQ = business meaning (ontology, graph, semantic models, operations agents)
2. Foundry IQ = knowledge retrieval (knowledge bases, agentic retrieval, single API)
3. Together = agents that act with intelligence + enterprise security built in

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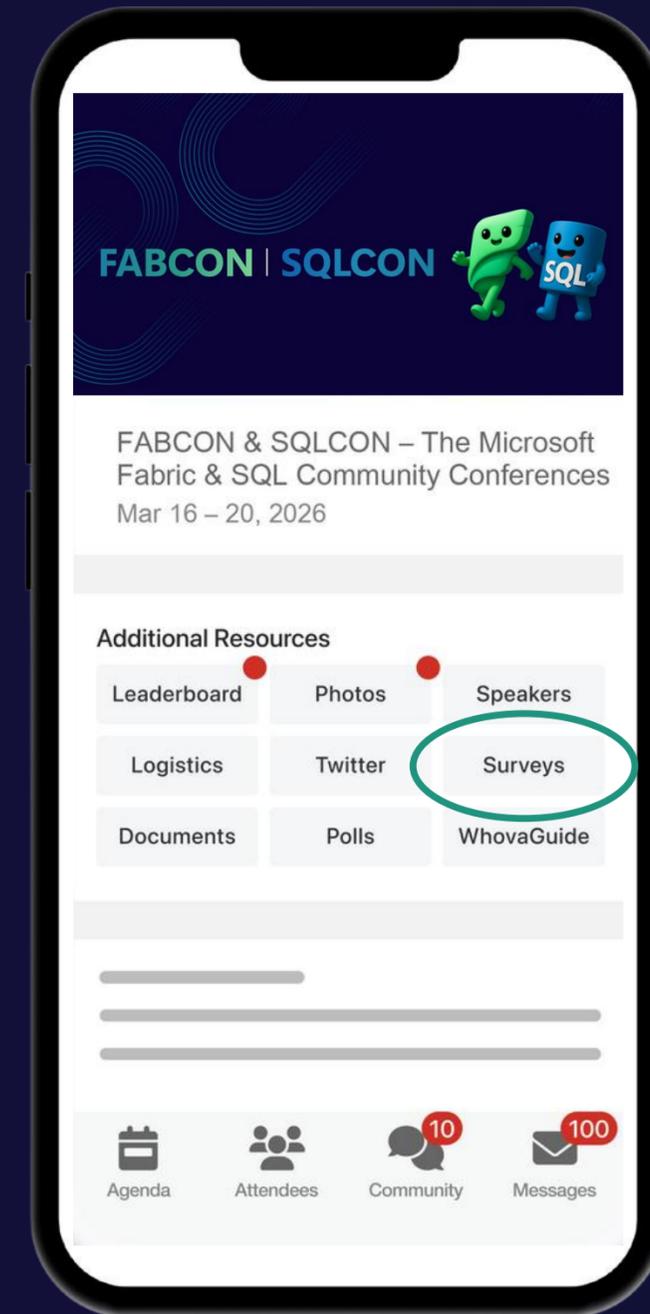
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