
#FABCONSQLCON2026
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PL-300 Power BI Data Analyst

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Session Roadmap

1 **Honest Caveats** — What you need to know before investing time

2 **AI Solutions Landscape** — Data Agents, Copilot Studio, and where they fit

3 **Setup, Prerequisites & Costs** — What it takes to get started

4 **Solution Walkthroughs** — Three data scenarios, increasing complexity

5 **Deep Dives** — Modeling, schema design, grounding, and testing

6 **Decision Guides** — Take-home frameworks for your Monday morning

Honest Caveats

Setting expectations so you can invest wisely

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Caveat #1: This Is Preview

Fabric Data Agents + Copilot Studio integration is currently in preview

What this means:

- New features ship monthly — MCP endpoints, M365 Copilot integration, and ontology support all landed in the last 6 months
- Some features may be removed or rearchitected before GA
- SLAs, performance guarantees, and full documentation are not yet final

Build to learn, not to bet the farm — yet

Caveat #2: Microsoft Follows Adoption

Microsoft invests in features that get used — and mothballs what doesn't stick

Historical examples:

- Cortana Intelligence Suite — launched with fanfare, quietly retired
- Power BI Dataflows v1 — replaced by Dataflows Gen2 in Fabric
- Data Activator — promising concept, unclear adoption trajectory

The signal to watch: Is your organization actually using this in production?

If you adopt early, you influence the roadmap. If you wait, the feature may not survive.

Caveat #3: Set a 3-Month Horizon

The AI/agentic space moves faster than enterprise planning cycles

Evidence of pace:

- GPT-4o retired from Copilot Studio (Oct 2025)
- GPT-4.1 became default model (Oct 2025)
- GPT-5 reached GA in Copilot Studio (Nov 2025)
- **Three model generations in under two months**

Recommendation: Schedule a formal re-evaluation every 3 months

Review: What changed? What broke? What new capability unlocks a use case?

Caveat #4: This Is One Piece of the Toolkit

Fabric Data Agents are one part of a broader agentic AI ecosystem

The bigger picture:

- **Azure AI Foundry Agents** — custom agents with code-first control
- **Semantic Kernel** — orchestration framework for complex AI workflows
- **Microsoft 365 Copilot** — the end-user surface for enterprise AI
- **Copilot Studio** — the low-code agent builder and orchestrator
- **MCP (Model Context Protocol)** — the emerging interop standard

Processes will change. Not just tools — the way we think about data access will change.

AI Solutions in Fabric & Copilot

Understanding the landscape before choosing a path

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What Is a Fabric Data Agent?

AI-powered assistants that engage in natural language conversations about your enterprise data

Core capabilities:

- Understands your data schema across lakehouses, warehouses, semantic models, KQL databases, and ontologies
- Enforces governance — RLS, CLS, and user permissions flow through automatically
- Interprets business context to surface relevant, actionable insights
- Stores conversation history across sessions for continuity

Key distinction: These are not just NL-to-SQL. They reason across multiple data sources and maintain context.

What Is Copilot Studio?

Low-code platform for building custom AI agents with multi-agent orchestration

What it brings to the table:

- Visual agent builder with topics, triggers, and knowledge sources
- **Connected Agents** — link Fabric Data Agents as specialized "experts"
- Multi-channel deployment: Teams, web, M365 Copilot, custom apps
- Model flexibility — currently on GPT-5 GA, with versioning controls

The pattern: Copilot Studio = orchestrator. Fabric Data Agent = domain expert.

User asks in Teams → Copilot routes → Data Agent queries → grounded answer returns

Where Do These Fit?

Choose based on your scenario:

- **Native Copilot in Power BI** — user is already in a report, needs contextual Q&A on visible data
- **Fabric Data Agent (standalone)** — domain expert on a specific dataset, used by analysts in Fabric
- **Data Agent + Copilot Studio** — multi-agent orchestration, mixed knowledge, deployed to Teams/web
- **Azure AI Foundry / Semantic Kernel** — full code-first control, custom RAG, complex workflows

Start with the simplest option that meets the use case. Escalate complexity only when needed.

Where Do Users Actually Interact?

Consumption surfaces (today):

- **Power BI Copilot Pane** — ask questions while viewing reports
- **Fabric workspace** — interact with data agents directly in the Data Science experience
- **Microsoft Teams** — via Copilot Studio published agents
- **Microsoft 365 Copilot** — data agents alongside other M365 AI capabilities
- **Custom apps** — via public API endpoints
- **VS Code / AI tooling** — via managed MCP server endpoints (new at Ignite 2025)

The MCP endpoint is significant — non-Microsoft AI systems can now plug into your Fabric data agents securely.

Setup, Prerequisites & Costs

What it takes to get started

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Prerequisites Checklist

Fabric capacity:

- F2 or higher (or P1+ with Fabric enabled) — Copilot/AI included on all paid SKUs since April 2025

Tenant settings (admin portal):

- Fabric Data Agent tenant setting — enabled
- Cross-geo AI processing and storage — enabled
- XMLA endpoints — enabled (for semantic model data sources)
- Standalone Copilot experience — enabled

Data sources (at least one, with data):

- Warehouse, Lakehouse, Power BI Semantic Model, KQL Database, or Ontology

Copilot Studio: Same tenant, same account, M365 Copilot license

Roles & Security Model

Who needs what access?

- **Data Agent Author:** Workspace Contributor+ role, access to underlying data sources
- **Data Agent Consumer:** At least Read access to the published agent
- **Copilot Studio Author:** M365 Copilot license + Copilot Studio author role
- **End User (Teams):** Access to the published Copilot Studio agent

Critical decision: Authentication mode

- **User Authentication** — queries run as the end user (RLS enforced per user)
- **Agent Author Authentication** — queries run as the author (simpler, but shared access)

For most enterprise scenarios, User Authentication is the right choice — but it requires each user to have data source access.

Costs — No Surprises

Fabric capacity (required):

- **F2: ~$262/month** (Copilot/AI included at no extra cost since April 2025)
- Below F64: Users need Pro or PPU licenses for Power BI content
- F64+: No individual Power BI licenses needed for consumers

Copilot Studio (if building custom agents):

- Pay-as-you-go: $0.01 per Copilot Credit (Azure subscription required)
- Prepaid: $200/tenant/month for 25,000 credits
- M365 Copilot license: $30/user/month (required for authoring)

Cost optimization tip:

- Start with pay-as-you-go Copilot Studio for pilot projects
- Use F2 for dev/test, scale capacity only when needed

The F2 Copilot inclusion was a game-changer — many in your org may still think F64 is required.

Deployment Options

Spectrum from simple to orchestrated:

Level 1: Fabric Data Agent (standalone)
- Create agent → add data source → publish → users query in Fabric. **Time to value: hours**

Level 2: Data Agent in Power BI Copilot
- Attach published agent to Copilot pane → users ask questions alongside reports. **Time to value: hours**

Level 3: Data Agent + Copilot Studio → Teams
- Build agent → connect data agent → add topics/triggers → publish to Teams. **Time to value: days**

Level 4: Multi-agent orchestration
- Multiple specialized data agents → Copilot Studio orchestrator → deployed across channels

Solution Walkthroughs

Three scenarios, increasing complexity

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Solution A: Technical / Operations

Scenario: Fabric Capacity Metrics App or FUAM as data source

Characteristics:

- Operational data — well-structured, narrow domain
- Clear entity relationships — capacity, workspace, user, operations
- Numeric-heavy — CU consumption, refresh counts, query durations
- Low ambiguity — questions map cleanly to single tables/columns

Example queries:

- *"What was my peak CU usage last Thursday?"*
- *"Which workspaces consumed the most capacity this week?"*
- *"How many dataset refreshes failed yesterday?"*

Solution A: Why This Works

Agent excels when:

- Schema is narrow and self-descriptive
- Column names are unambiguous ("peak_cu_usage" not "value1")
- Questions map to single-table aggregations
- Domain is technical — less room for interpretation

This is your MVP path if you already have data in Fabric and are monitoring it:

- Zero sample data setup — capacity metrics are your own real data
- Immediate relevance to Fabric practitioners
- Fast time to value for demonstrating agent capability

If you can only build one data agent to prove the concept, start here.

DEMO

Solution A: Capacity Metrics Agent

Querying operational data with a narrowly-scoped Fabric Data Agent

Solution B: Business Data — Complex Schema

Scenario: Wide World Importers

Schema complexity:

- Many-to-many relationships (supplier substitutions, post tags)
- Temporal/SCD patterns (slowly changing dimensions, temporal tables)
- Multi-granularity fact tables (daily vs. monthly aggregations)
- Self-referencing hierarchies (posts → answers → comments)

Why this matters:

- This is what real enterprise data looks like
- If agents can't handle this, they can't handle your production schemas

Solution B: What Goes Wrong

Common agent failures on complex schemas:

- **Ambiguous joins** — agent picks the wrong path through M:M relationships
- **Temporal confusion** — doesn't know which date column represents "current"
- **Granularity mismatch** — aggregates at wrong level, producing nonsense numbers
- **Hallucinated columns** — invents column names that sound right but don't exist
- **Over-joining** — joins 6 tables when the answer was in one

The lesson:

- Raw complex schemas are hostile to AI agents
- The agent is not broken — the schema was never designed for this consumer

Data Engineer takeaway: This is where your modeling choices become critical.

DEMO

Solution B: Complex Schema Agent

Demonstrating failure modes on Wide World Importers

Solution C: Business Data — Simplified Schema

Scenario: Same business data, modeled for agent consumption

What changed:

- Star schema with clear fact/dimension separation
- Descriptive column names ("total_order_amount" not "amt")
- Column descriptions populated as grounding anchors
- Bridge tables hidden behind semantic model measures
- SCD complexity abstracted into "current" views
- Calculated columns for common derived values

Same questions from Solution B — now they work.

The Punchline

Modeling is the #1 lever for agent accuracy

The agent didn't get smarter between Solution B and Solution C

The data got clearer

Your data engineers and modelers are the most important people in this story

Investment in schema design pays off exponentially when AI agents are the consumer.
This is not optional work — it is the prerequisite for production-quality agent responses.

DEMO

Solution C: Simplified Schema Agent

Same questions, cleaner schema — showing why modeling matters

Deep Dives

Modeling, schema, grounding, and testing

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Data Agent Modeling (AI Engineer View)

What the agent "sees":

- Table names, column names, data types, relationships, and descriptions
- It does **NOT** see your data values unless it queries them

Best practices:

- Use descriptive, unambiguous names — avoid abbreviations and codes
- Define explicit foreign keys and cardinality
- **Write rich column descriptions** — the single highest-ROI grounding mechanism
- Hide internal/technical columns the agent should never reference
- Use meta-prompting: ask the agent to generate its own instructions from the schema

Measures vs. calculated columns:

- Prefer calculated columns for values agents need to filter/group on
- Measures work for aggregations but agents sometimes struggle with DAX context

Schema Design (Data Engineer View)

Design for your new consumer — the AI agent:

- Denormalize strategically — flatten M:M into bridge-free views where possible
- Resolve SCD ambiguity — create “current” views alongside history tables
- Eliminate field name collisions — “date” appears in 12 tables; which one?
- Separate concerns — one semantic model per bounded domain, not one mega-model

Agent instructions:

- Capped at 15,000 characters — be concise and precise
- Define what the agent should and should NOT answer
- Include example queries and expected patterns

IT governance note: Schema decisions here have downstream implications for security, lineage, and compliance.

Getting Grounded Responses

Grounding = responses tied to actual data, not hallucinated

Techniques:

- **Agent instructions** — constrain scope explicitly ("Only answer questions about sales data")
- **Agent descriptions** — specific and non-overlapping; directly affects orchestration routing
- **Column descriptions** — the single most impactful grounding mechanism
- **Semantic model layer** — acts as a grounding buffer between raw data and the agent

What to prevent:

- Out-of-domain answers ("I'm a sales agent but sure, let me guess about HR data")
- Hallucinated joins (agent invents relationships that don't exist)
- Confident wrong answers (plausible but incorrect aggregations)

The goal is not "always answers" — it's "answers correctly or says it can't."

Testing Patterns

Build your test library before production, not after

Golden question sets:

- 20–50 questions with known correct answers, covering edge cases
- Run after every model update, schema change, or instruction edit
- Track accuracy over time — regressions are common after model swaps

What to test for:

- Correct answers on straightforward questions (baseline accuracy)
- Graceful refusal on out-of-scope questions (does it say “I don’t know”?)
- Consistency across phrasings (same question worded 3 ways = same answer?)
- Performance under concurrent load

Copilot Studio supports side-by-side agent version comparison — use it.

Monitor in production. Wrong answers at scale erode trust faster than no answers.

Decision Guides

Take-home frameworks for your Monday morning

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Semantic Model vs. Direct SQL / Lakehouse

Use a Semantic Model when:

- Business logic is encoded in DAX measures
- You need consistent calculations across reports and agents
- RLS/CLS is already defined in the model
- The domain is well-bounded (sales, finance, HR)

Go direct to SQL/Lakehouse when:

- Data is exploratory or ad-hoc (data science use cases)
- Schema is simple and self-descriptive
- You need access to data not yet modeled (raw ingestion layers)
- Performance requires pushing compute to the engine

Hybrid approach: Semantic models for governed “golden path” answers, direct access for exploration

Copilot Studio vs. Native Fabric Copilot

Native Copilot in Power BI when:

- Users are already in reports
- Questions are contextual to visible data
- No custom orchestration needed
- Quick deployment, minimal setup

Copilot Studio when:

- Multi-agent orchestration (multiple data domains)
- Custom topics, triggers, and conversation flows
- Deployment to Teams, web, or M365 Copilot
- Mixed knowledge sources (SharePoint + Fabric + websites)
- Need for human-in-the-loop or scheduled automation workflows

If "ask a question about this report" is enough → Native. If "build a domain expert" is the goal → Studio.

Signs You're Not Ready to Deploy

- ✗ No golden question test set
- ✗ No column descriptions in your semantic model or schema
- ✗ No clear domain boundary for the agent ("it should answer everything")
- ✗ No executive sponsor who understands "this is preview"
- ✗ No plan for monitoring agent responses in production
- ✗ No defined escalation path for wrong answers

If more than two of these apply, invest in readiness before deployment.

Closing

What to do Monday morning

Five Things to Do Monday Morning

1. Verify your Fabric tenant settings — enable Data Agents, Copilot, and XMLA endpoints
2. Build one data agent on your capacity metrics — prove the platform works
3. Audit one production semantic model — add column descriptions, check naming clarity
4. Write 20 golden test questions for your most likely agent domain
5. Schedule a 3-month re-evaluation checkpoint in your calendar

The 3-Month Rule

Today's date: March 2026

Your first checkpoint: June 2026

Review:

- What new capabilities shipped?
- What broke or changed since your last evaluation?
- Which of your pilot use cases proved value?
- What can you now do that you couldn't three months ago?

Re-evaluate. Adapt. Repeat.

The only bad strategy is the one that doesn't evolve.

Resources & Contact

Documentation:

- Fabric Data Agents: learn.microsoft.com/fabric/data-science/data-agent-overview
- Copilot Studio + Fabric: learn.microsoft.com/fabric/data-science/data-agent-microsoft-copilot-studio
- Fabric Copilot Capacity: learn.microsoft.com/fabric/enterprise/fabric-copilot-capacity

Community:

- Fabric Community: community.fabric.microsoft.com
- Copilot Studio Labs: microsoft.github.io/mcs-labs
- Fabric User Panel: aka.ms/JoinFabricUserPanel

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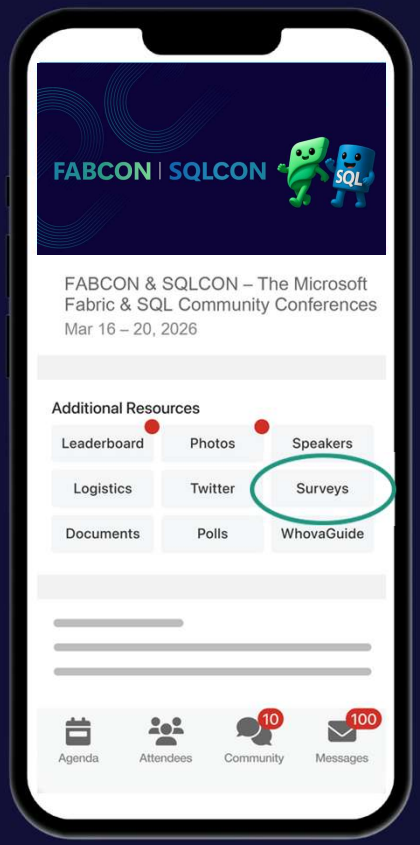

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