



Dynamics User Group Norge

# DYNUG

## Introduction to Analytics with Azure Synapse and Power BI

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# Agenda

- End-to-end analytics with Azure Synapse and Power BI
- Data ingestion and integration
- Enterprise data serving layer in Azure Synapse
- Self-service analytics with Power BI
- Community resources to learn Azure Synapse and Power BI

# Today's data realities

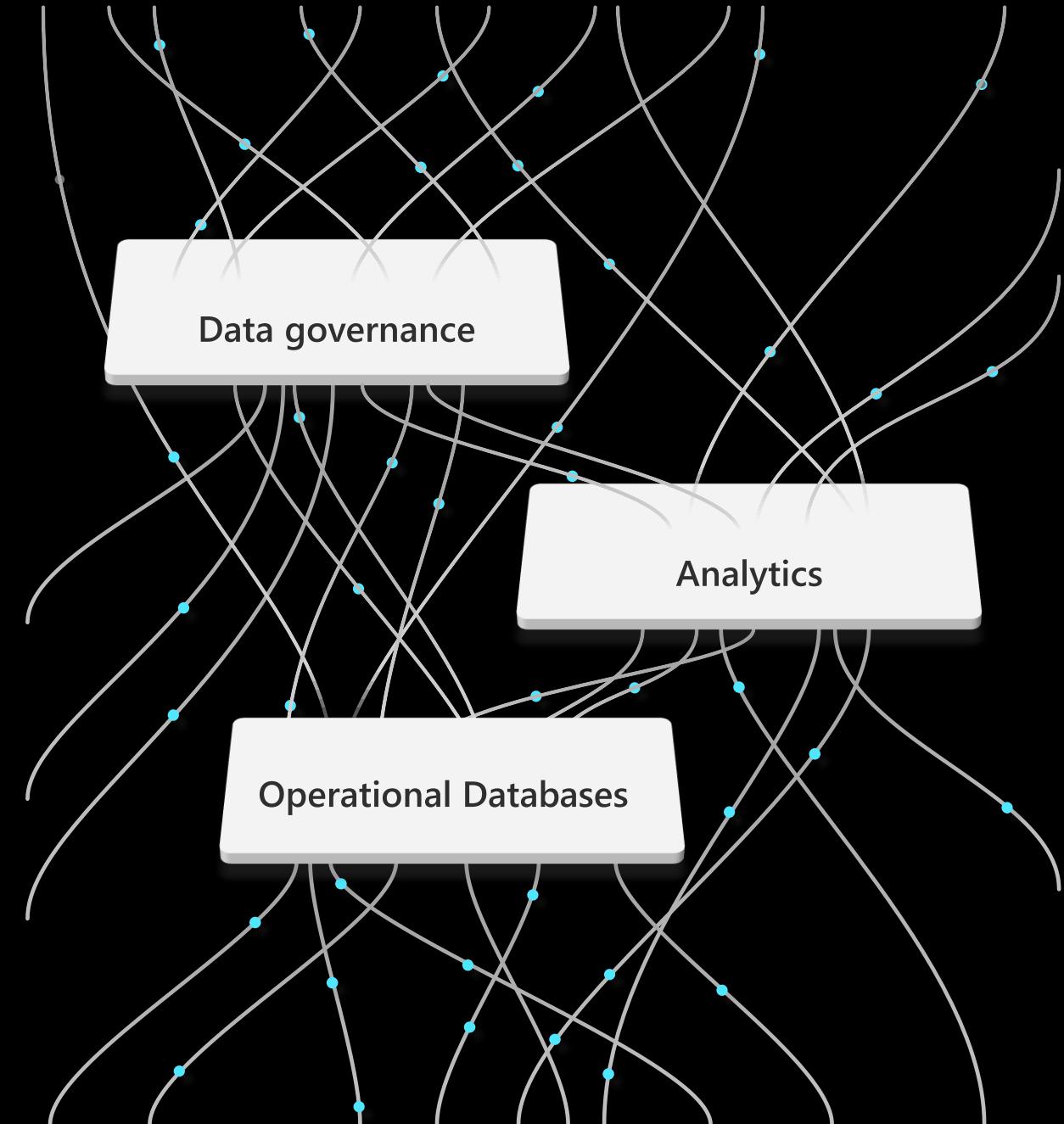
What **data** do I have?

Is it **trustworthy**?

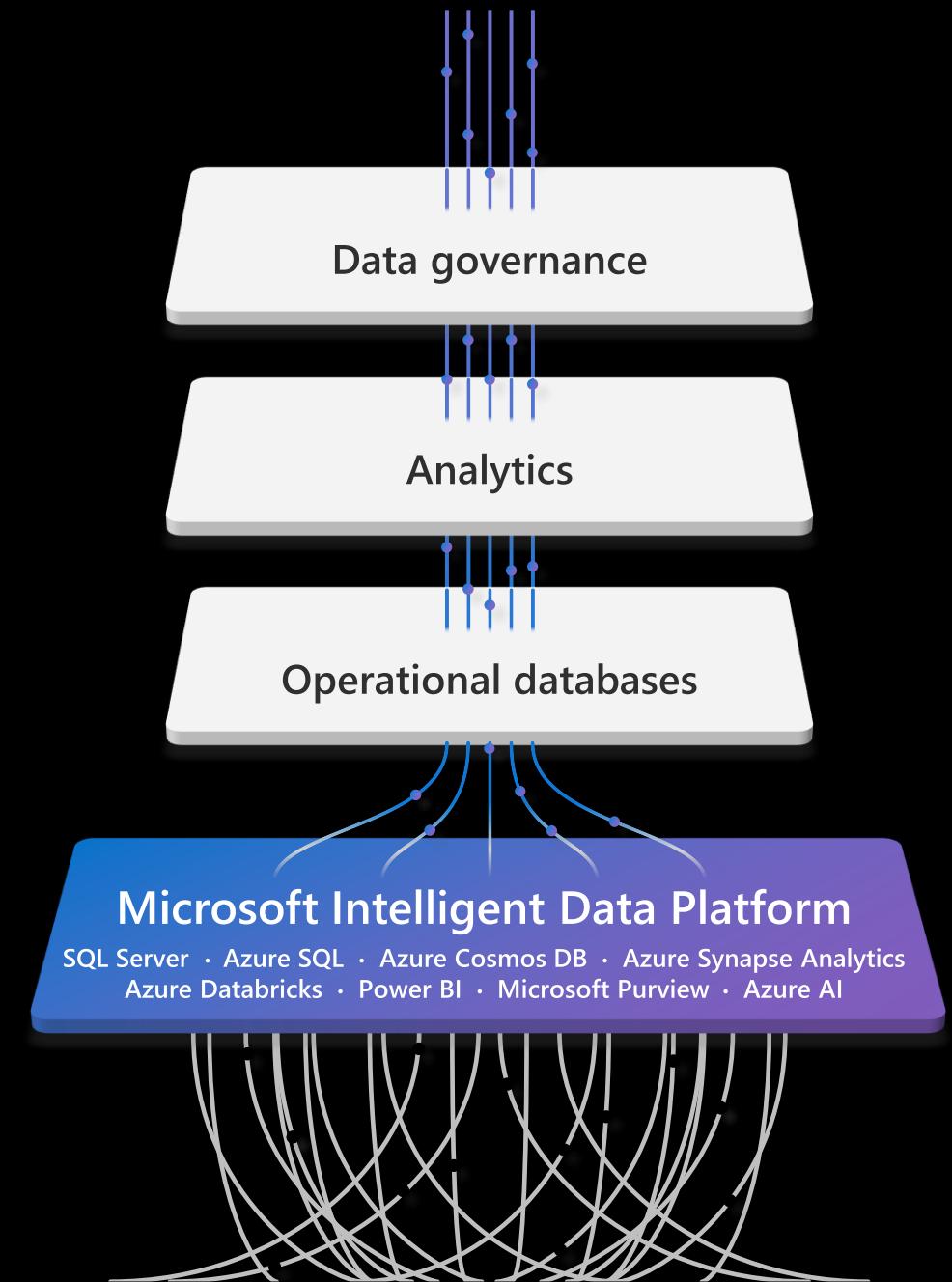
Can people access the **data** needed  
to make the right decisions?

How can I **enable faster**  
**business insights**?

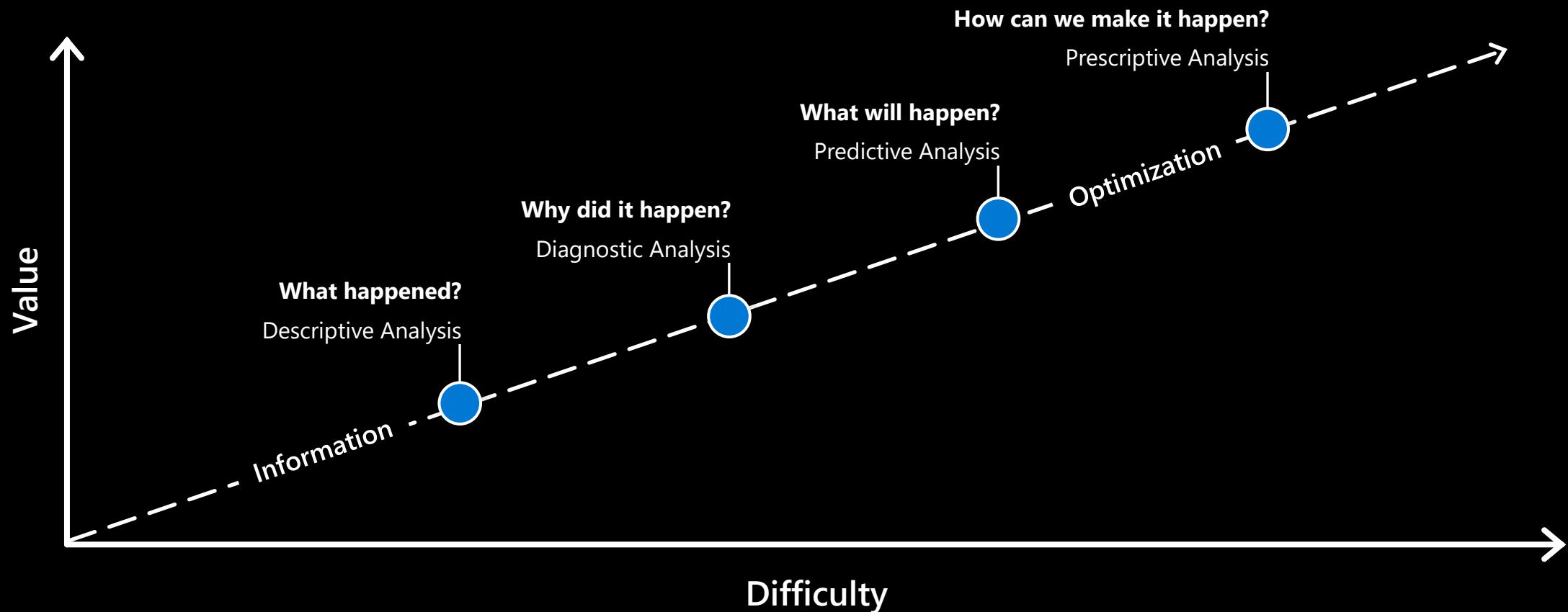
What's my **compliance exposure**?



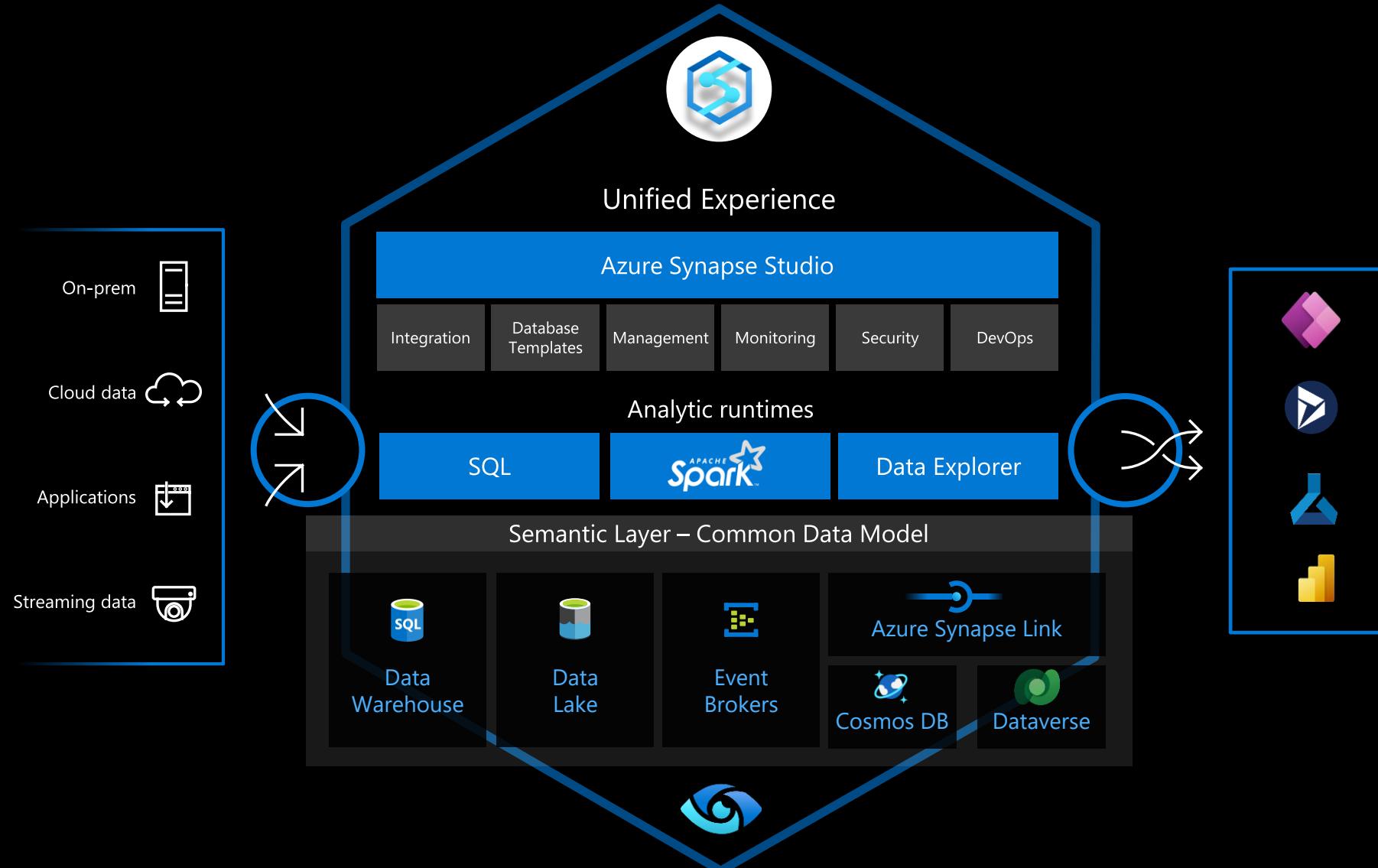
# Introducing Microsoft Intelligent Data Platform



# The Evolution of Analytics



# Azure Synapse Analytics



# Synapse Studio

End-to-end web UI for Synapse

Management (runtimes, security, monitoring)

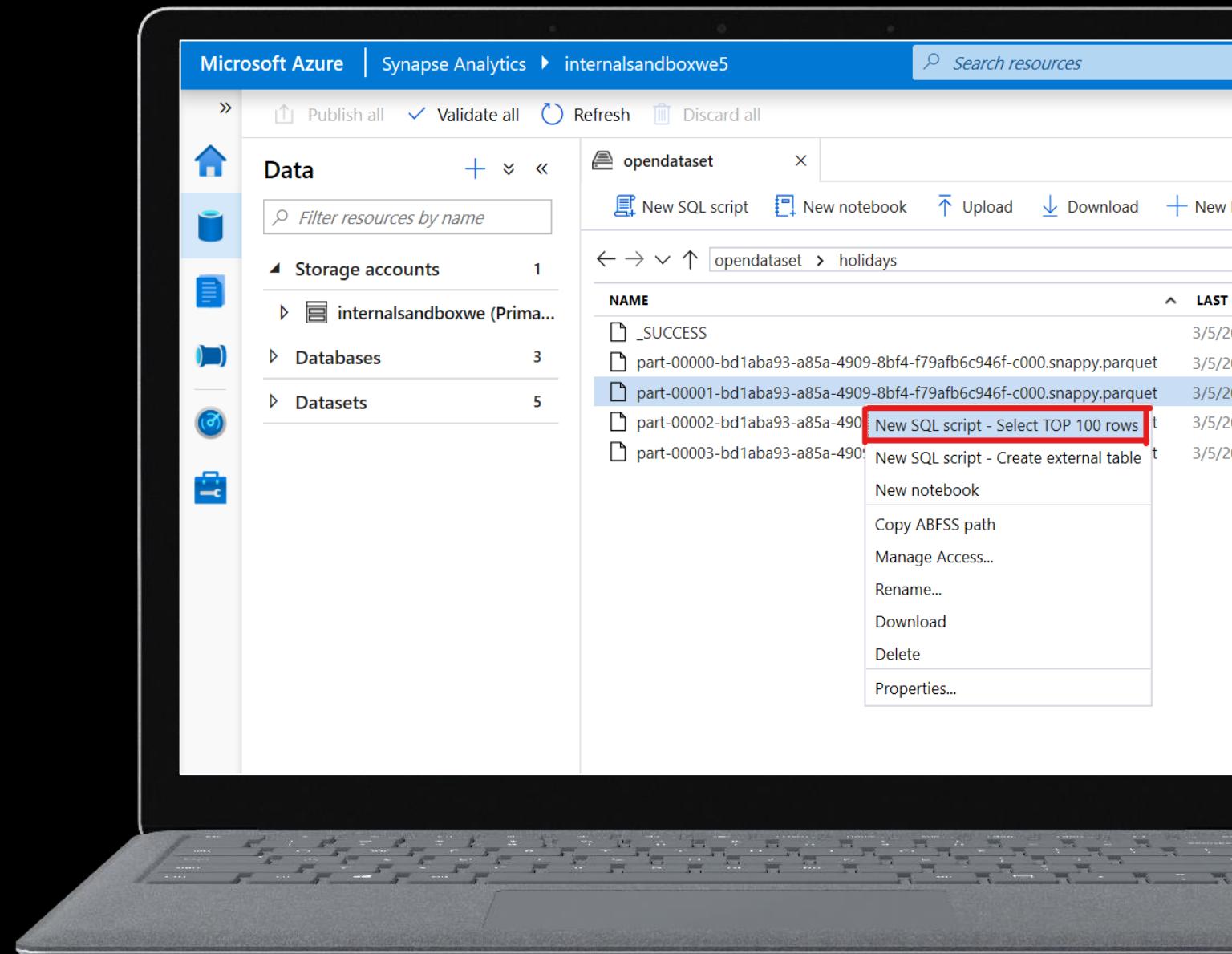
Navigation for databases and data lakes

Development (SQL, notebooks, pipelines, data flows)

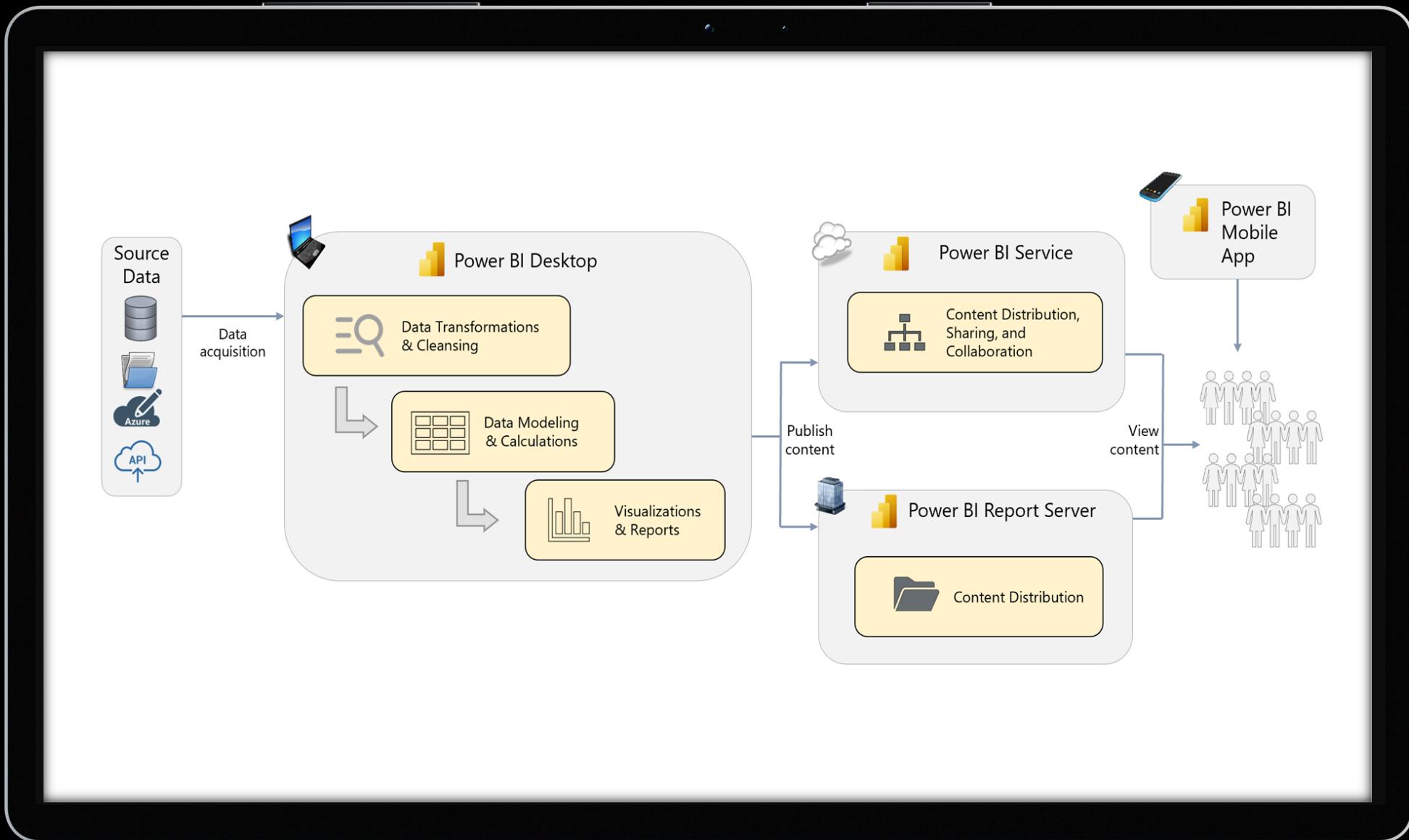
Quick file data exploration

Collaboration (CI/CD, comments)

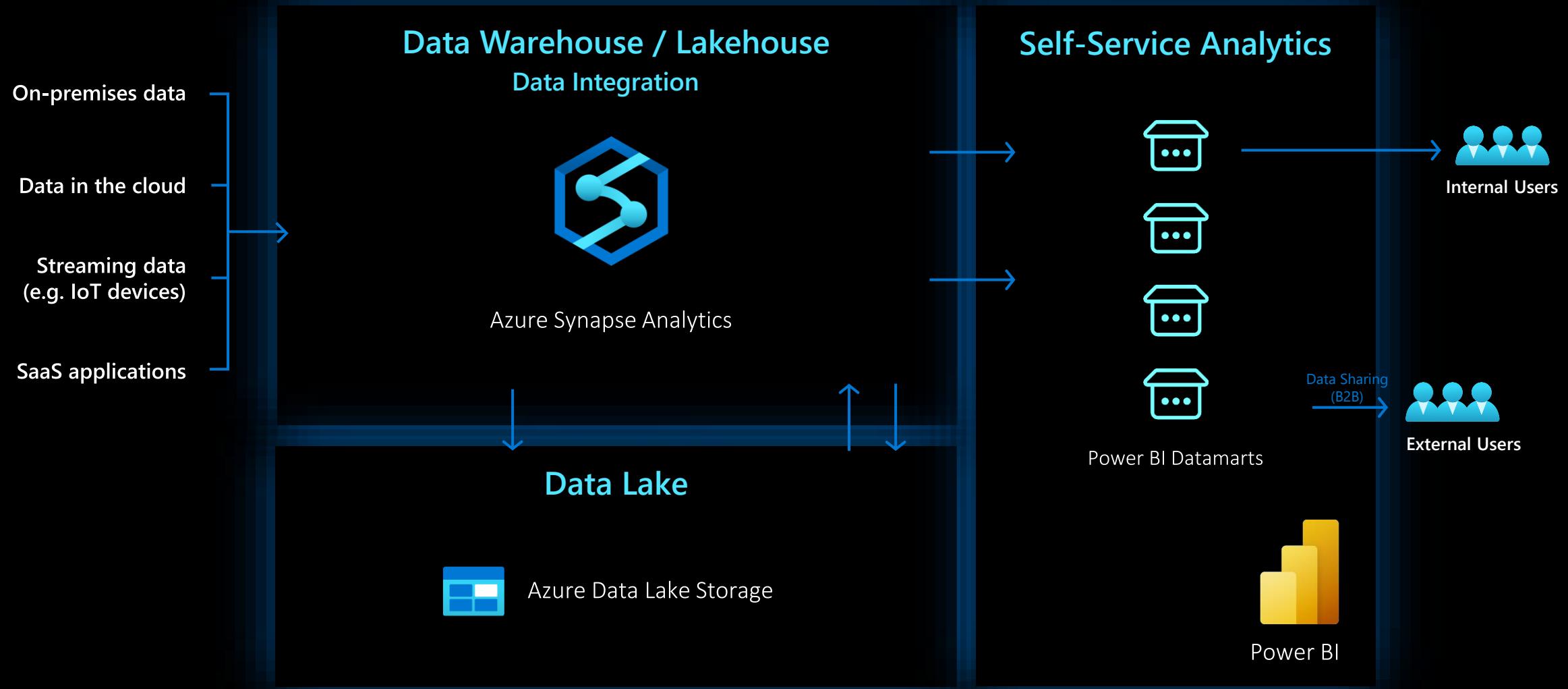
Integration with Power BI



# Power BI

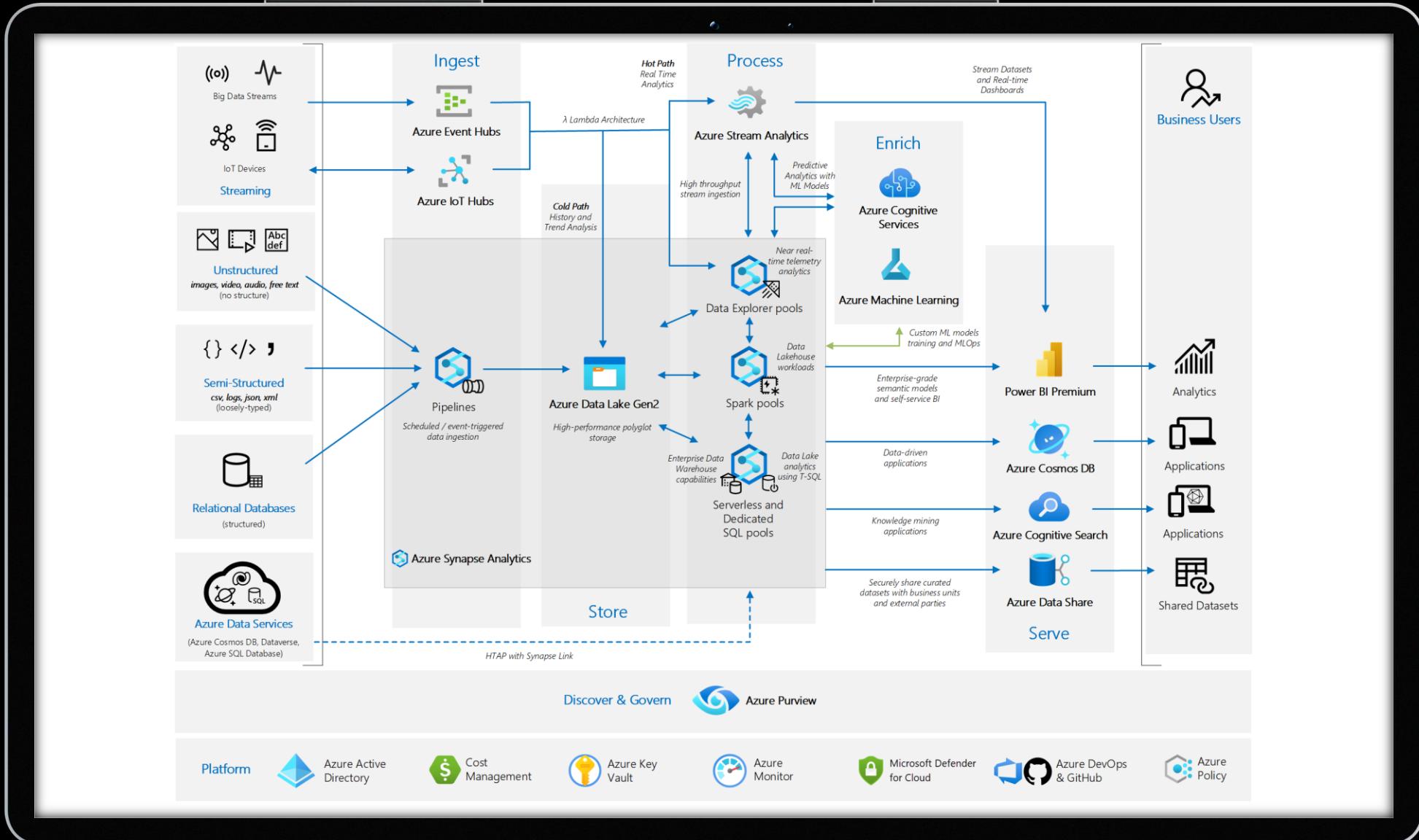


# Analytics with Azure Synapse and Power BI



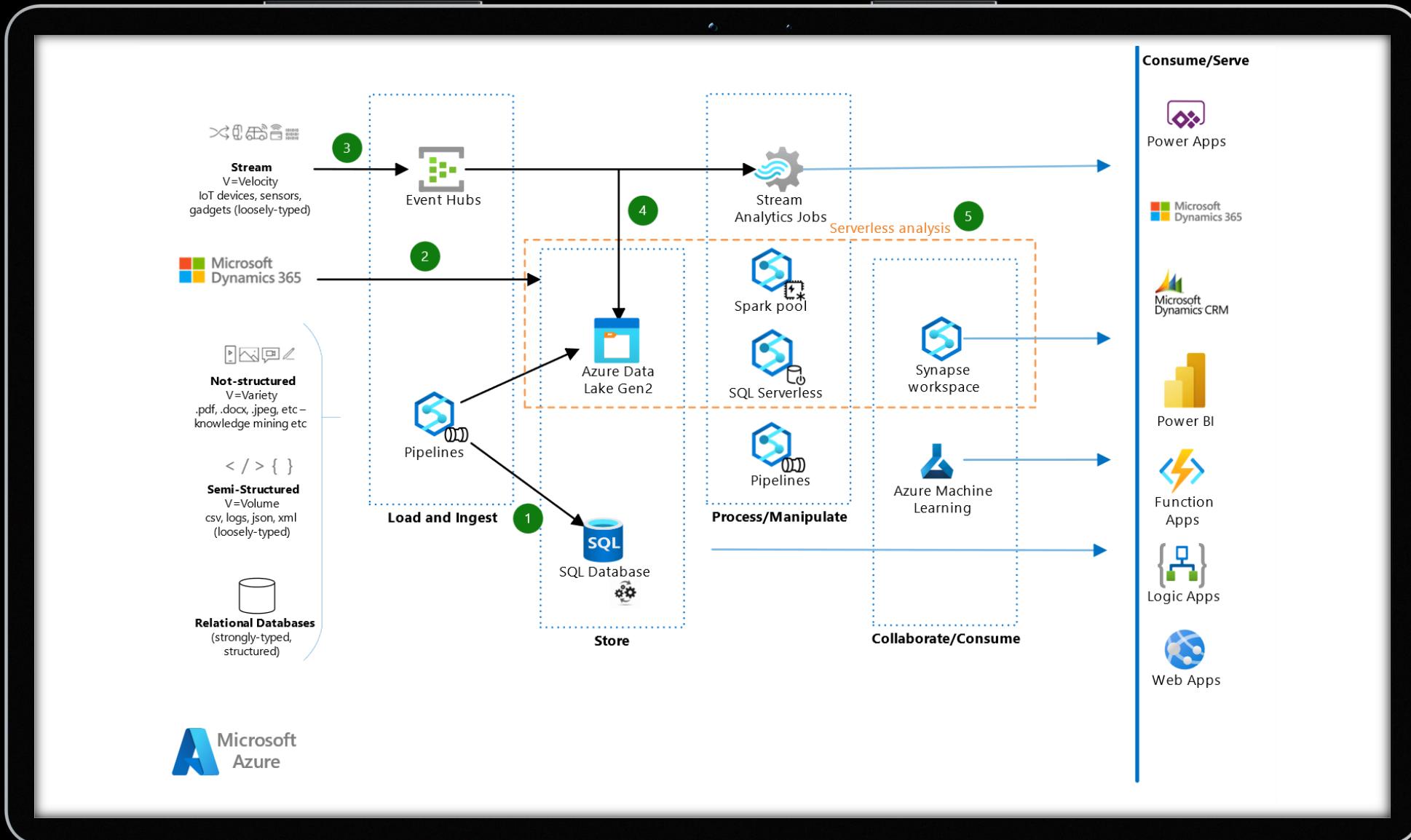
# Analytics on Azure

## End-to-end for Enterprise



# Analytics on Azure

## Small and Medium Business



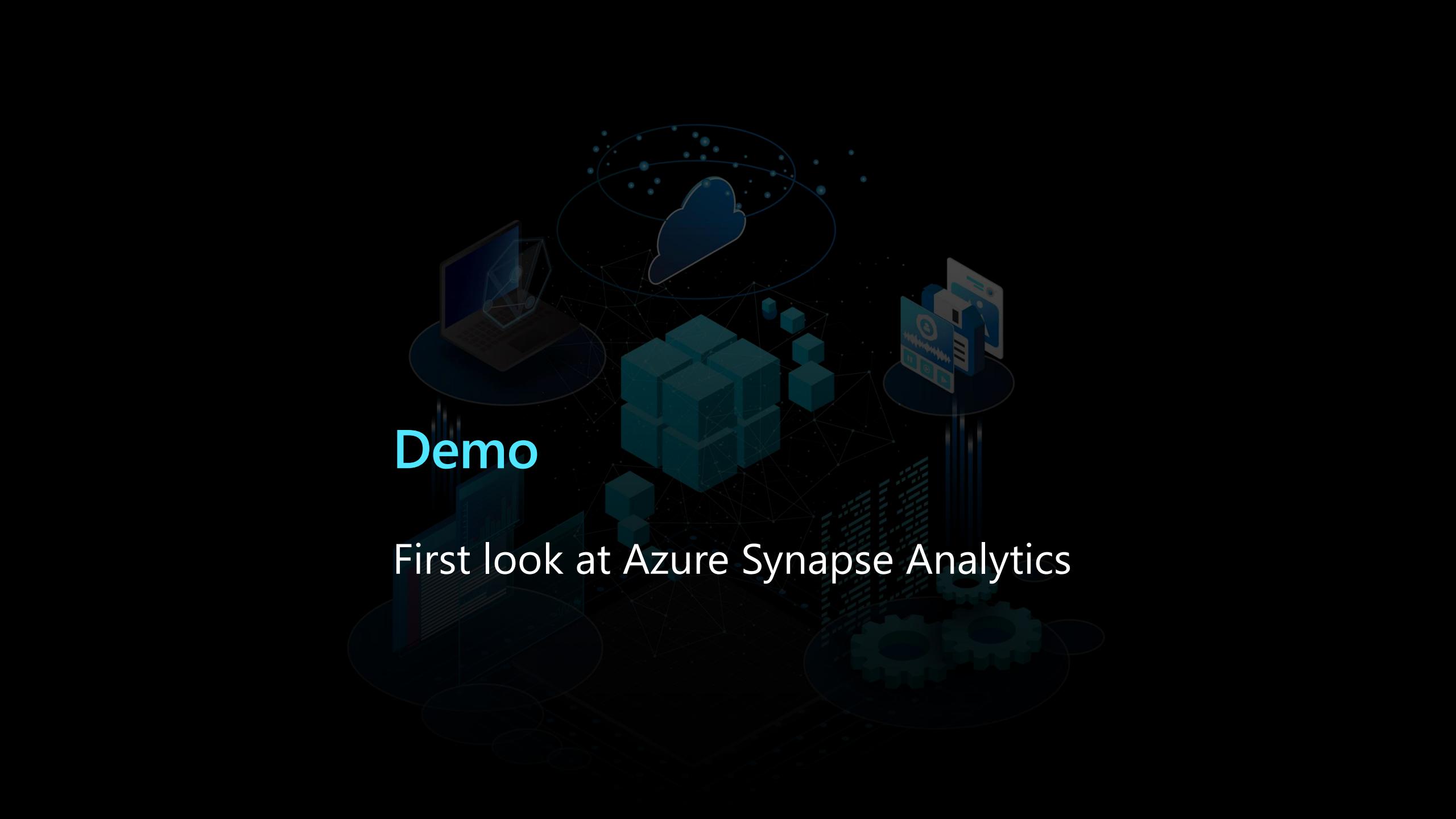
# Why Data Lake?

- Storage is the **landing zone** for data in the cloud
- Same pattern for **all major clouds** (AWS, Azure, GCP)
- It's **cheap** and can be cheaper using access tiers
- It's **redundant** (HDFS nature + geo-replication features)
- It's great for **quick and dirty analytics** (load & analyze)
- It can provide **performance** (compressed data formats)
- Often offers the most efficient way to **load data into data warehouse** (Polybase in Azure Synapse)
- Data can be **easily consumed** by modern BI tools

# Azure Data Lake Storage Gen2

- Hierarchical namespace
- Fine-grained security via RBAC and ACLs
- Optimized for analytics and big data
- Parallelized reads and writes
- Scaled-out over multiple nodes
- Hot/cold/archive tiers
- Azure Storage APIs
- Integrated with Azure Synapse and Power BI

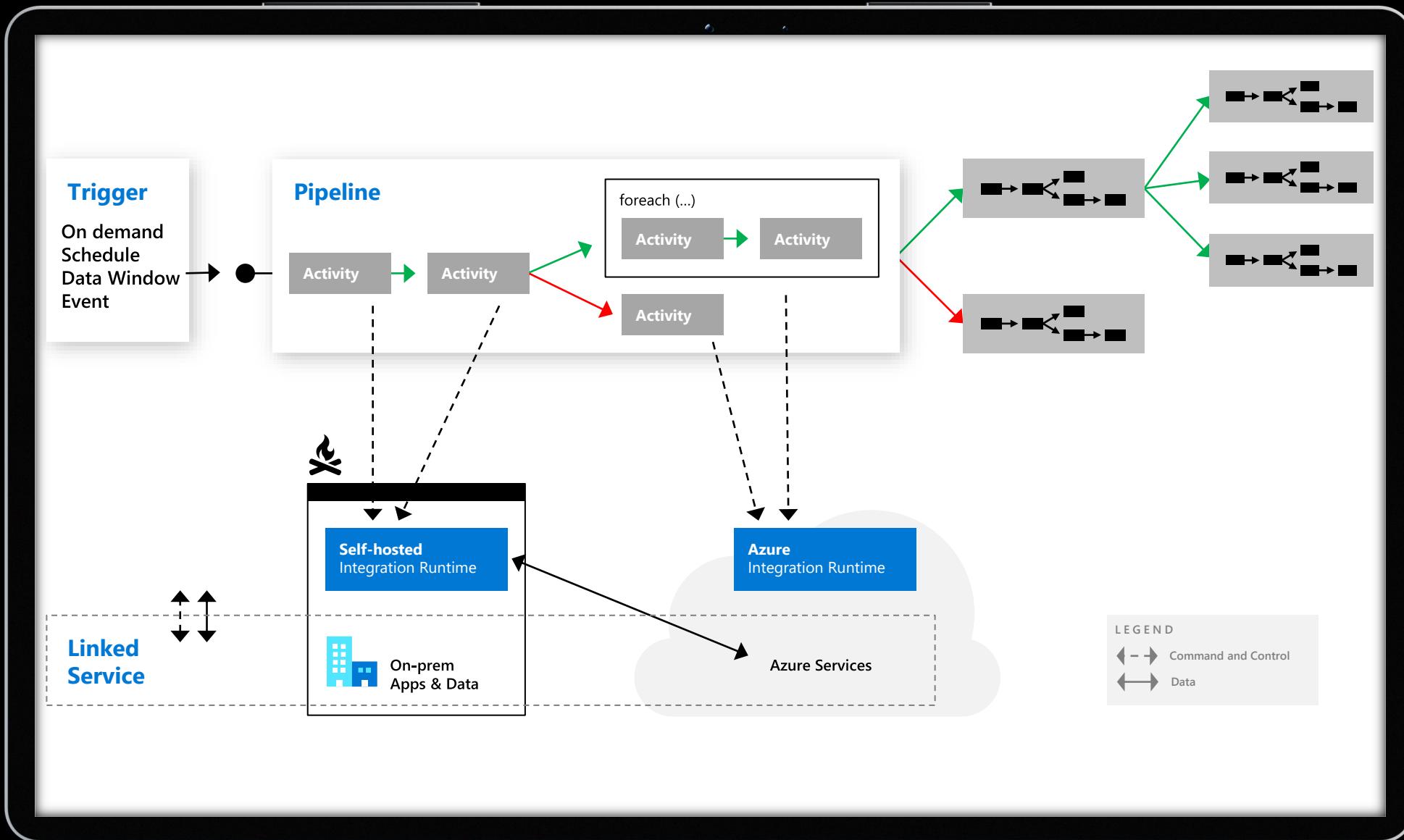




# Demo

## First look at Azure Synapse Analytics

# Synapse Pipelines – Orchestration at Scale



# Synapse Pipelines - 100+ Connectors

Amazon Marketplace Web Service	Amazon RDS for Oracle	Amazon RDS for SQL Server	Azure SQL Database Managed Instance	Azure Search	Azure Synapse Analytics	HubSpot	IBM	Iris	QuickBooks (Preview)	Quickbase (Preview)	REST	teradata.	Twilio (Preview)	Vertica
Amazon Redshift	Amazon S3	Amazon S3 Compatible	Azure Table Storage	Cassandra	Concur (Preview)	Magento (Preview)	MariaDB	Marketo (Preview)	SAP BW Open Hub	SAP BW via MDX	SAP Cloud For Customer	Web Table	Xero	Zendesk (Preview)
Apache Impala	Asana (Preview)	Azure Blob Storage	Couchbase (Preview)	DB2	DataVerse (Common Data Service for Apps)	Microsoft 365 (Office 365)	Microsoft Access	MongoDB	SAP ECC	SAP HANA	SAP ODP (Preview)	Zoho (Preview)	data.world (Preview)	Azure Batch
Azure Cognitive Services	Azure Cosmos DB (MongoDB API)	Azure Cosmos DB (SQL API)	Drill	Dynamics 365	Dynamics AX	MongoDB Atlas	MySQL	Netezza	SAP TABLE	SFTP	SQL server	Azure Data Lake Analytics	Azure Databricks	Azure Function
Azure Data Explorer (Kusto)	Azure Data Lake Storage Gen1	Azure Data Lake Storage Gen1 for Cosmos Structured Stream	Dynamics CRM	FTP	File system	ODBC	OData	Oracle	Salesforce	Salesforce Marketing Cloud	Salesforce Service Cloud	Azure HDInsight	Azure Machine Learning	Azure Machine Learning Studio (classic)
Azure Data Lake Storage Gen2	Azure Data Lake Storage Gen2 for Cosmos Structured Stream	Azure Database for MariaDB	Github	Google AdWords	Google BigQuery	Oracle Cloud Storage (S3 API)	Oracle Eloqua (Preview)	Oracle Responsys (Preview)	ServiceNow	SharePoint Online List	Shopify (Preview)	Azure Synapse Analytics (Artifacts)		
Azure Database for MySQL	Azure Database for PostgreSQL	Azure Databricks Delta Lake	Google Cloud Storage (S3 API)	Greenplum	HBase	Oracle Service Cloud (Preview)	PayPal (Preview)	Phoenix	Smartsheet (Preview)	Snowflake	Spark			
Azure File Storage	Azure Key Vault	Azure SQL Database	HDFS	HTTP	Hive	PostgreSQL	Power BI	Presto	Square (Preview)	Sybase	TeamDesk (Preview)			

# Data Flows

Low code transformations

Visually designed

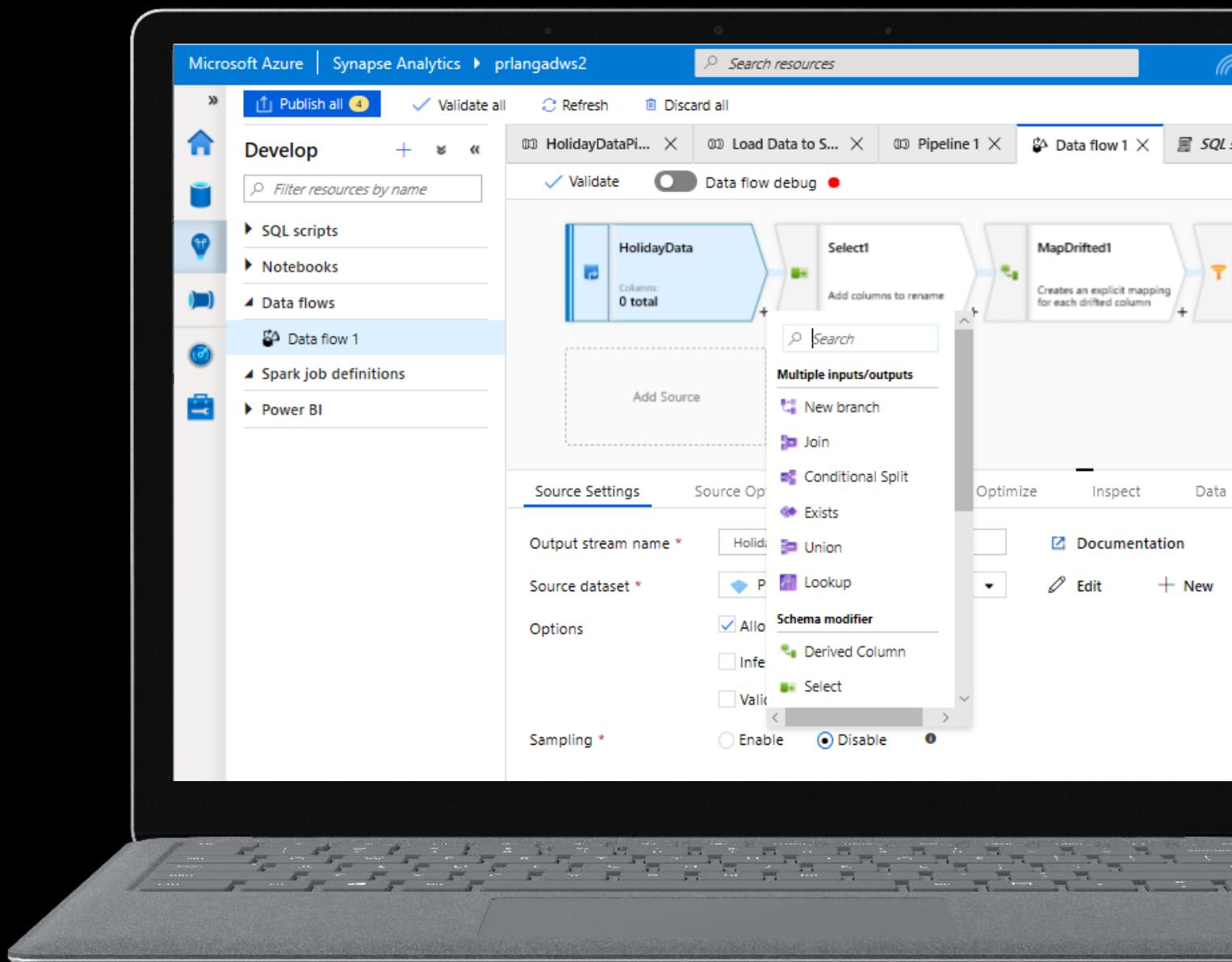
Executed in pipelines

Powered by Apache Spark clusters

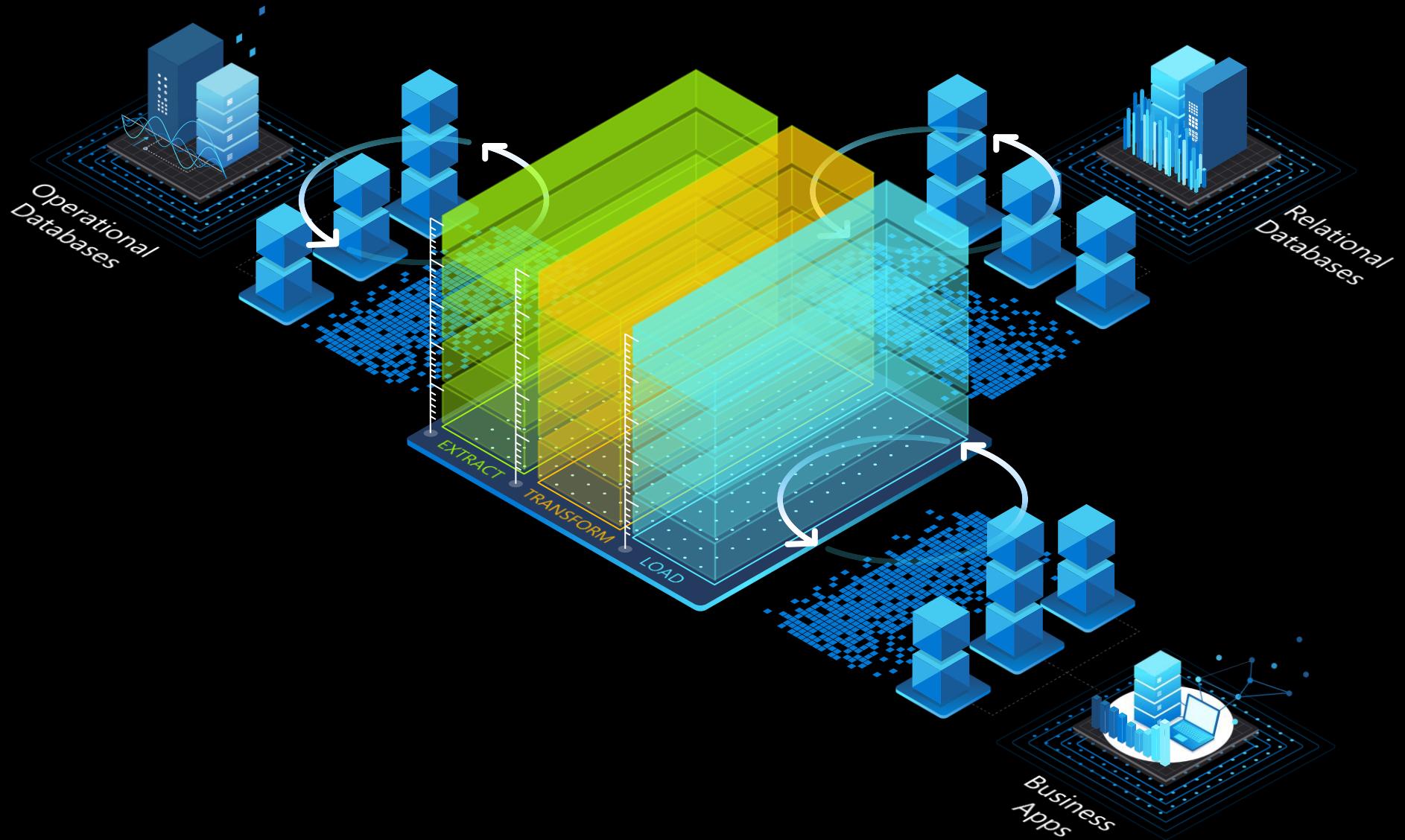
Interactive debugging with data preview

Built-in error handling

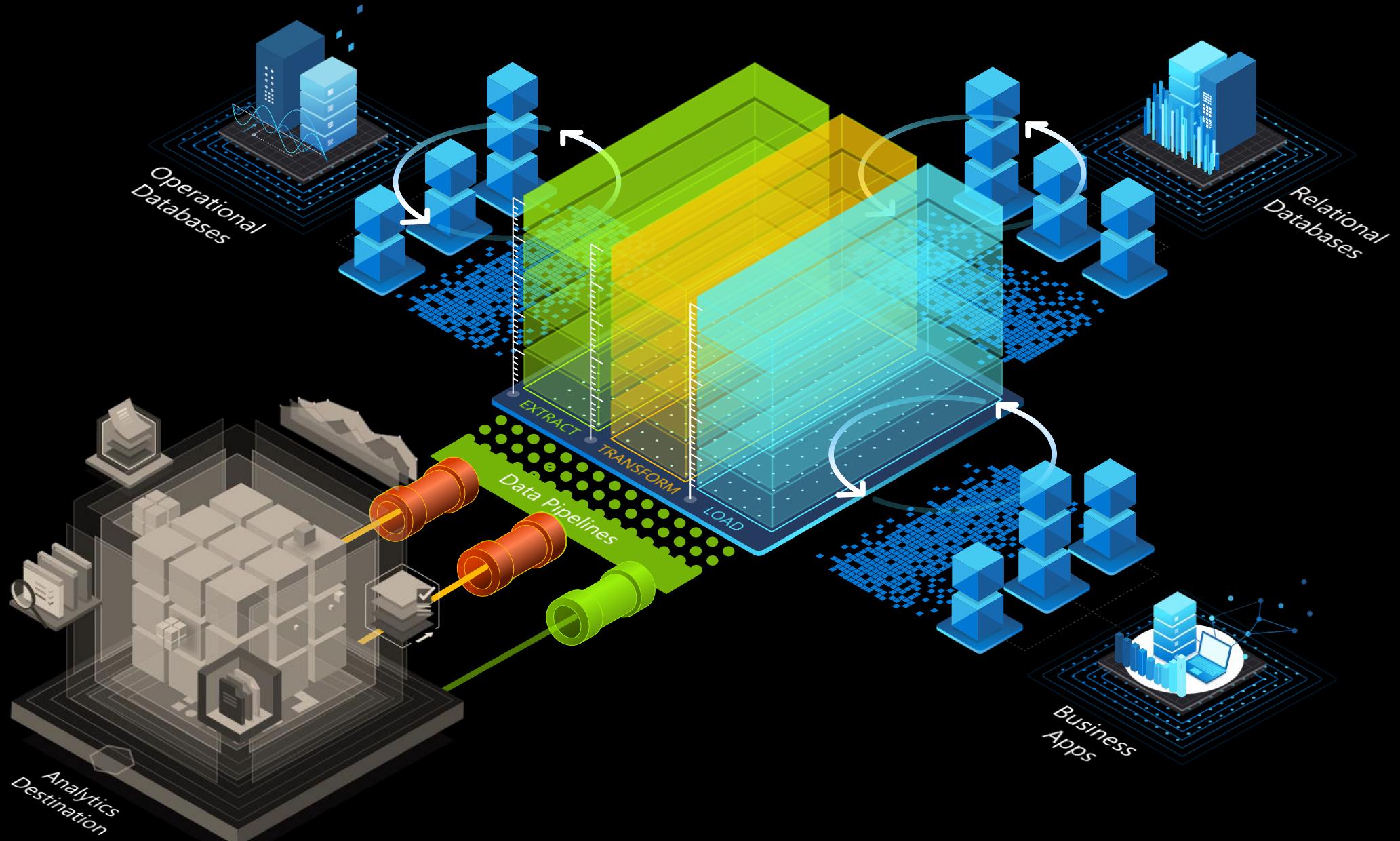
Partitioning scheme of the Spark cluster



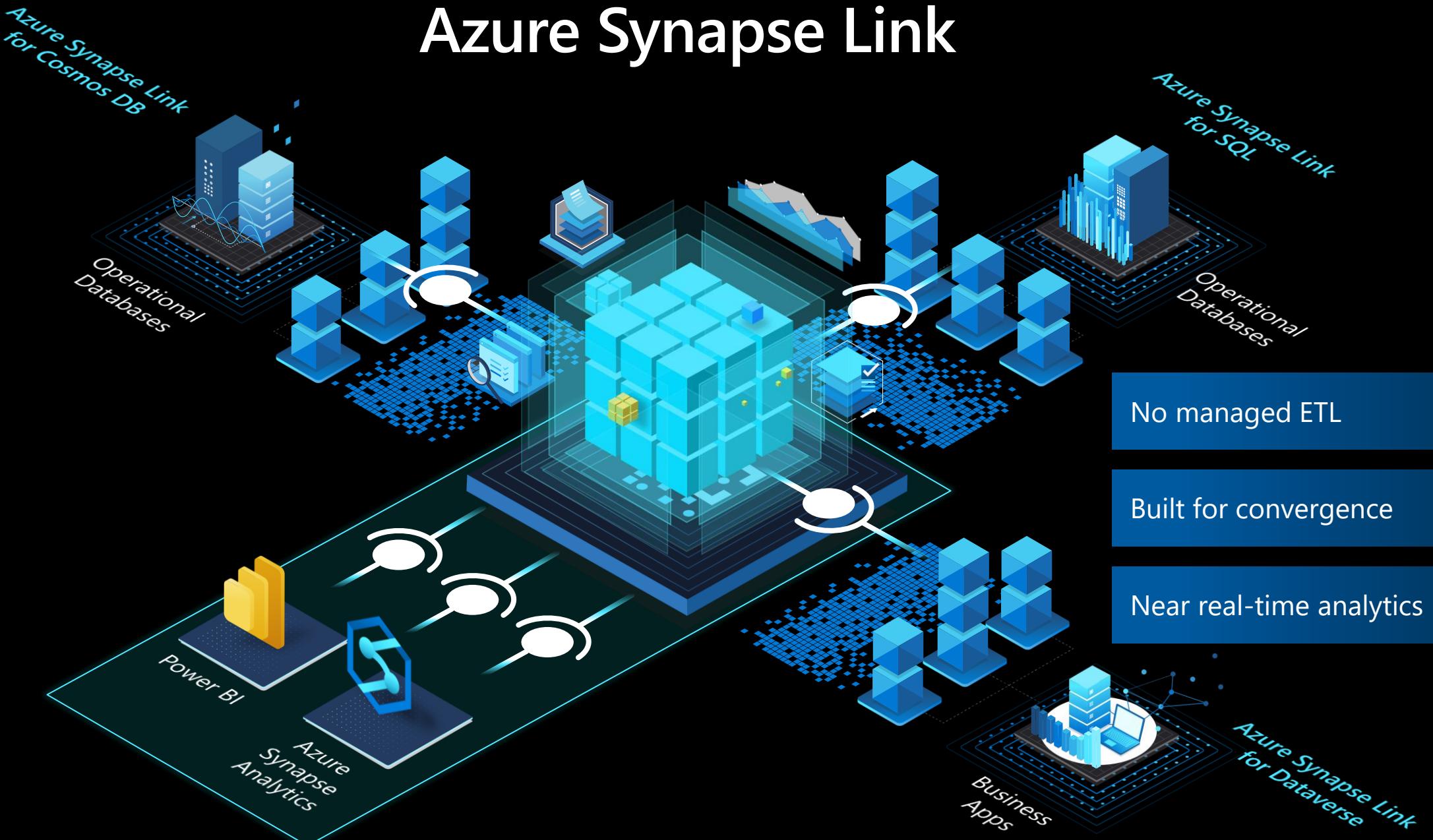
# ETL/ELT Challenge



# ETL/ELT Challenge



# Azure Synapse Link

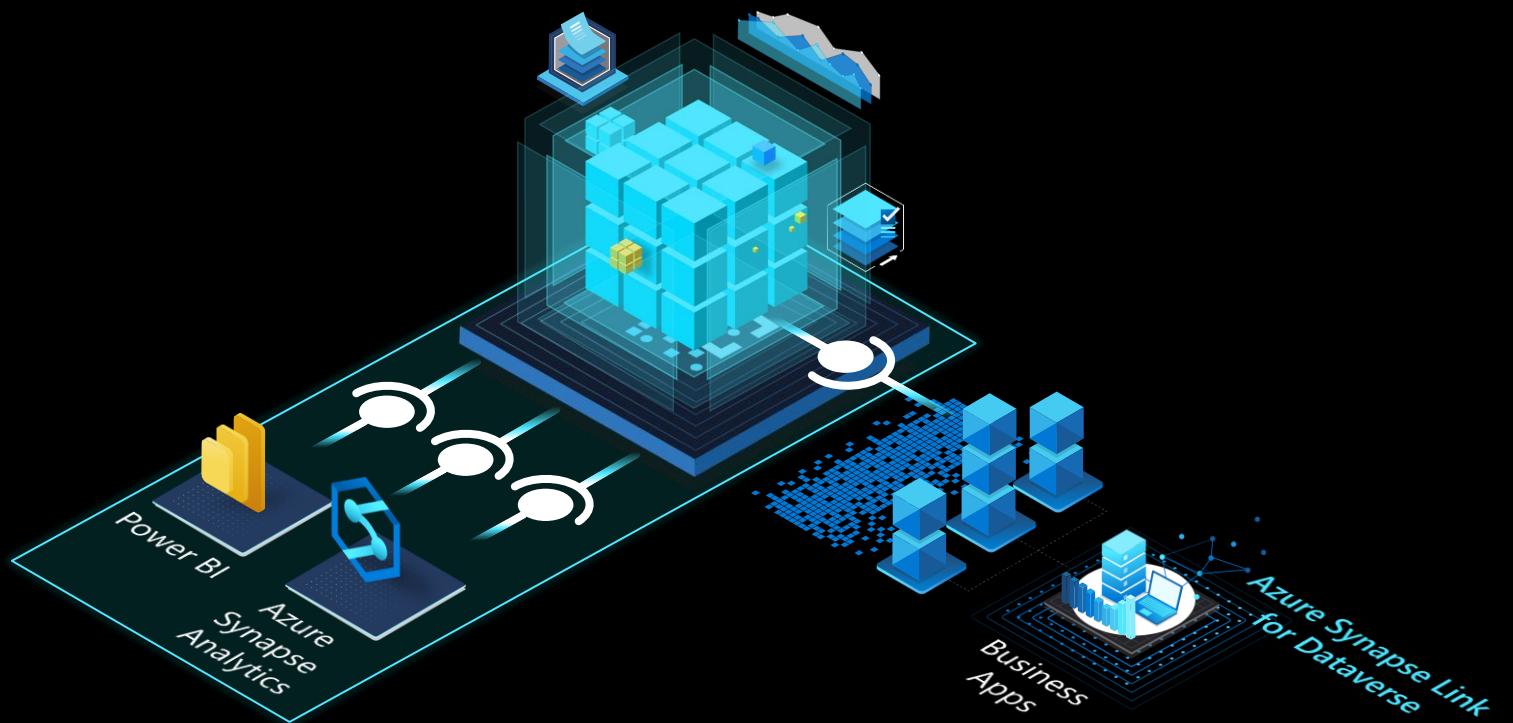


# Azure Synapse Link for Dataverse

Dataverse to Azure Synapse Analytics  
Dataverse to Azure Data Lake Storage Gen2

Data and metadata (Common Data Model)

Same AAD tenant, same Azure region



# Demo

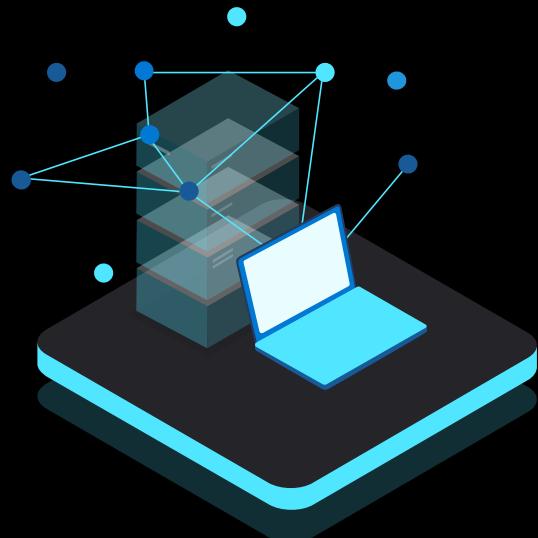
Data integration with Synapse Pipelines  
and Synapse Link for Dataverse

# Dedicated + serverless SQL

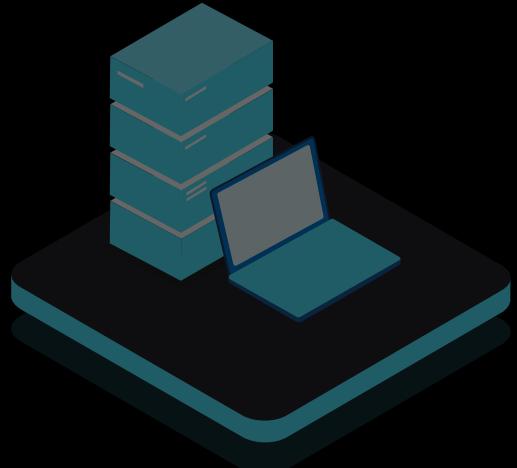
## Flexible consumption models

Serverless pay-per-query ideal for ad-hoc data lake exploration and transformation, and for logical data warehouses

Dedicated clusters optimized for mission-critical data warehouse workloads



Serverless



Dedicated

# Logical Data Warehouse

## Logical relational layer over data lake

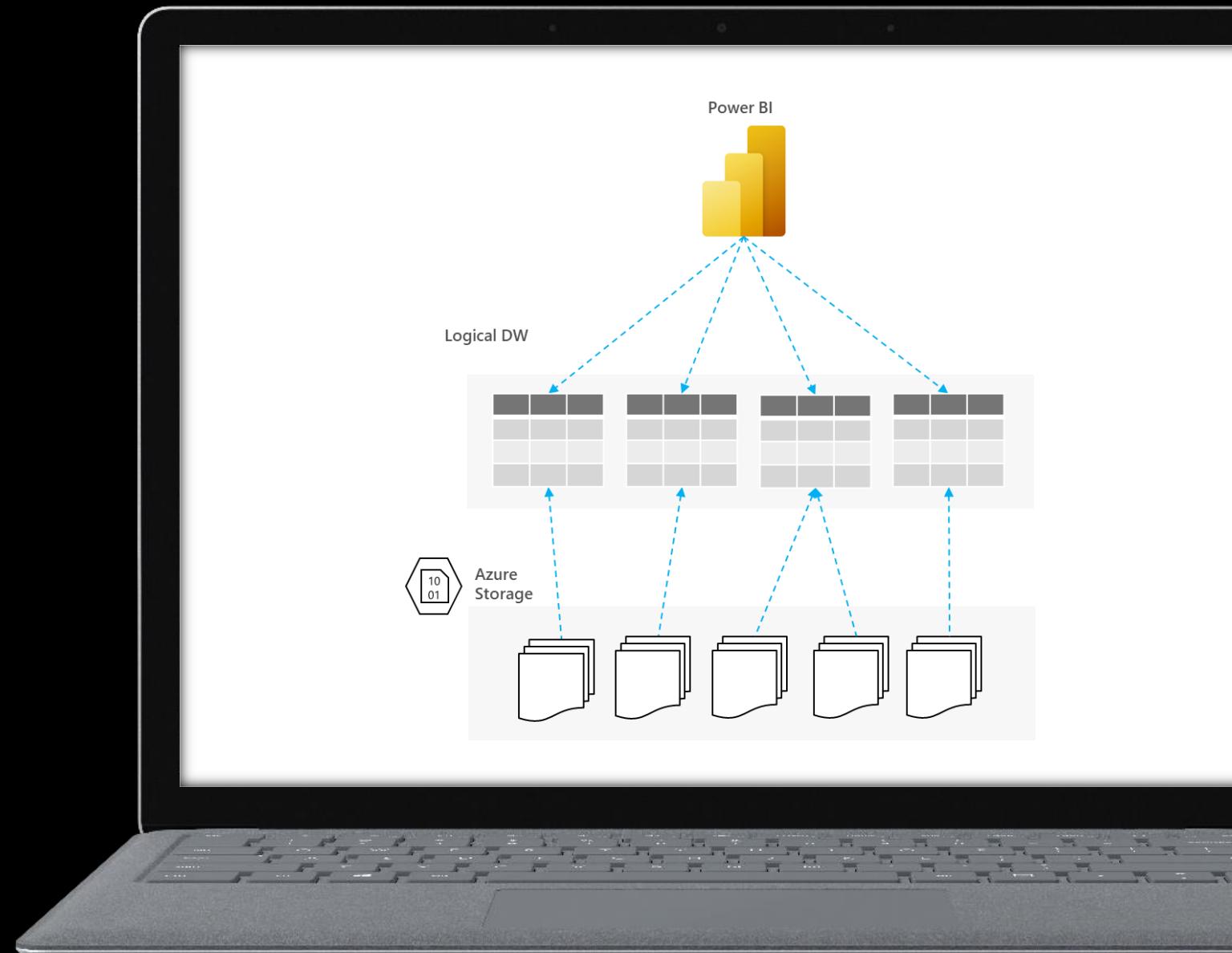
Abstract physical storage using tables and views

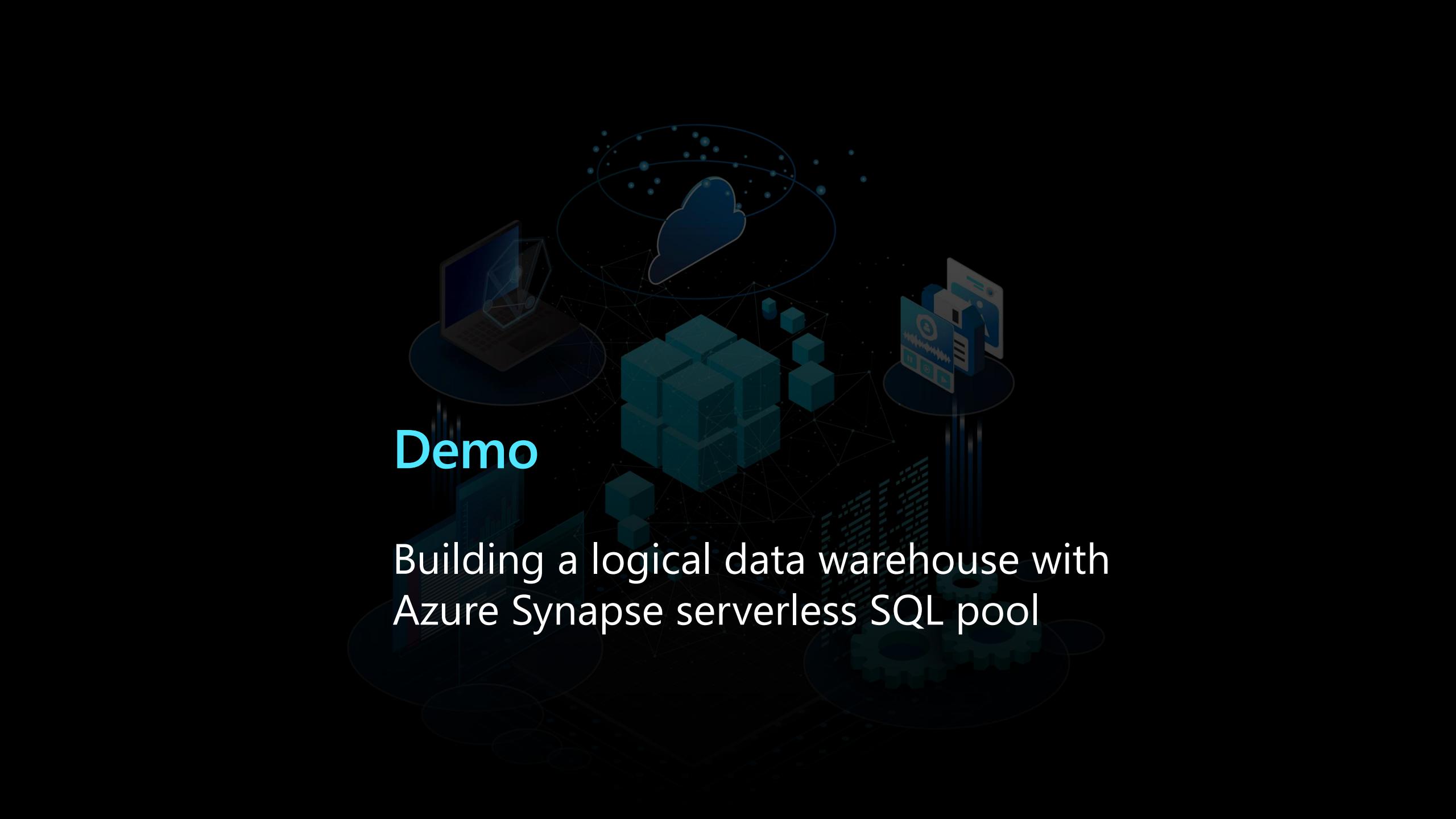
Direct connector to Azure Storage for large ecosystem of BI tools (not only Power BI)

BI tools that use SQL can work with files on storage

Complex data processing (joining and aggregation) on top of raw files

SQL Server permission model on top files





# Demo

Building a logical data warehouse with  
Azure Synapse serverless SQL pool

# Power BI Datamart

## Data management and serving

### Dataflow

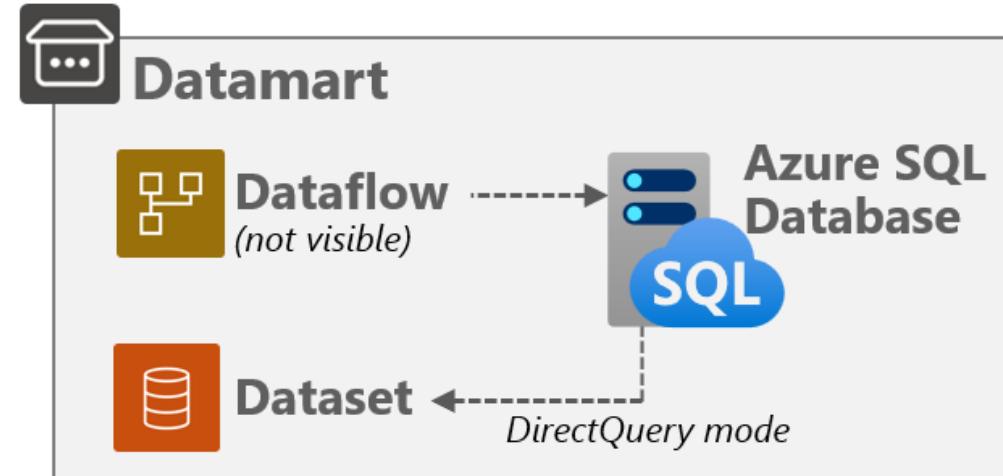
Ingest and transform data  
Multiple data sources possible

### Azure SQL Database

Fully managed analytical store  
Users can build queries visually and using SQL  
Can be accessed with SQL tools

### Dataset

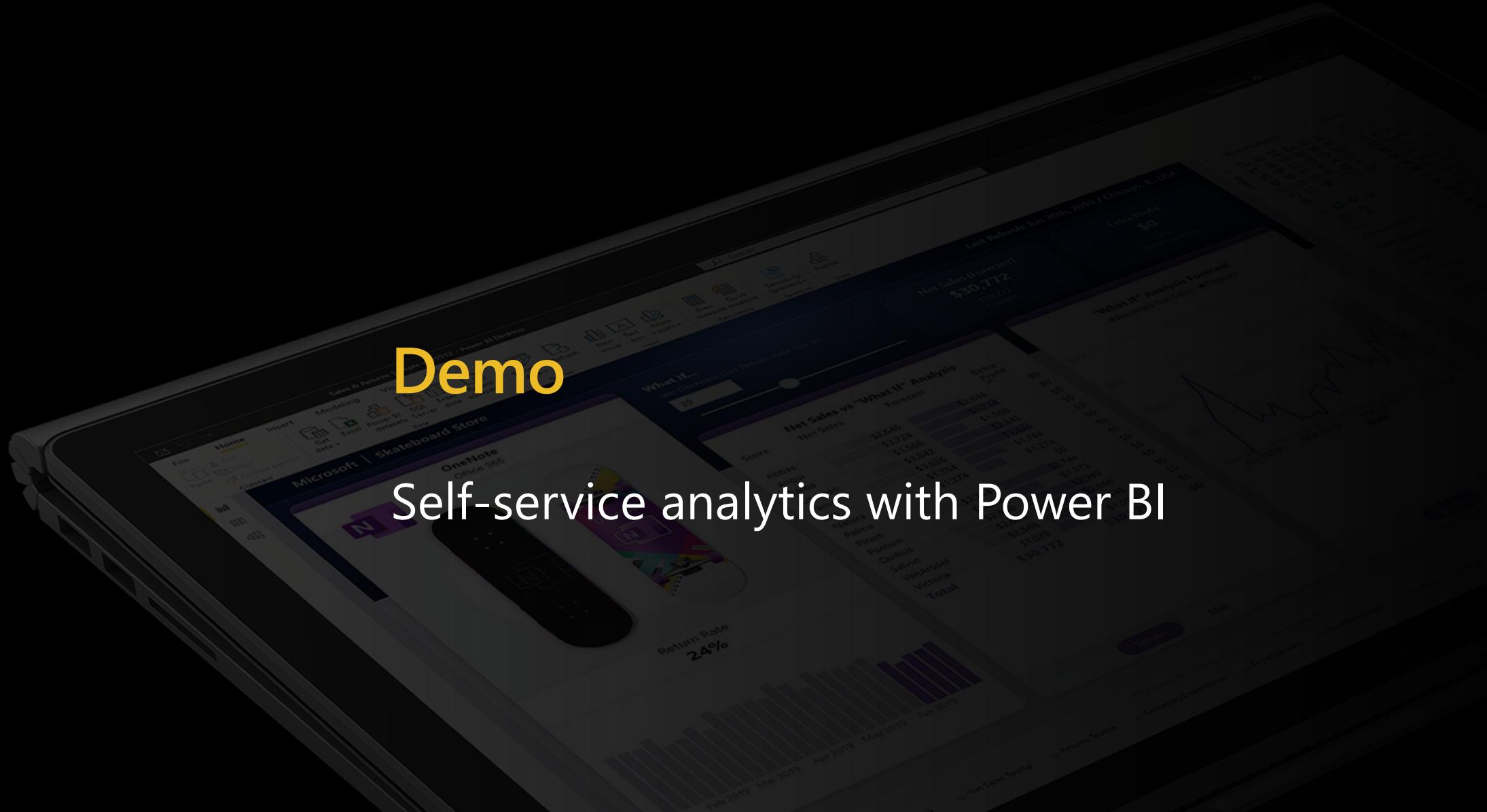
Built on top of Azure SQL DB  
Uses DirectQuery  
Can be enriched with relationships, measures and RLS



<https://www.coatesdatastrategies.com/blog/diagram-power-bi-datamart-overview>

# Demo

## Self-service analytics with Power BI





# Azure Synapse Community Resources

## ► Community Call to Action ►

- Follow us on Twitter: [@Azure\\_Synapse](https://twitter.com/Azure_Synapse)
- Read and comment on our blog: <https://aka.ms/SynapseBlog>
- Check monthly updates blog: <https://aka.ms/SynapseMonthlyUpdate>
- Subscribe to YouTube channel: <https://aka.ms/SynapseYouTube>
- Share ideas and vote for them: <https://aka.ms/SynapseIdeas>
- Join Azure Synapse Influencers program: <https://aka.ms/SynapseInfluencers>

## Product

- Product page: <https://aka.ms/Synapse>
- Documentation: <https://aka.ms/SynapseDocs>
- Reference architectures: <https://aka.ms/SynapseArchitectures>
- Security whitepaper: <http://aka.ms/SynapseSecurity>

## Technical Discussions and Q&A

- Microsoft Q&A: <https://aka.ms/SynapseQuestions>
- StackOverflow: <https://aka.ms/SynapseStackOverflow>

## Quickstart

- Get started in 60 minutes: <https://aka.ms/SynapseGetStarted>
- Azure Synapse Analytics Toolkit: <https://aka.ms/SynapseToolkit>

## Free Learning

- MS Learn – learning paths: <https://aka.ms/SynapseLearningPaths>
- Synapse Practitioner: <https://aka.ms/SynapsePractitioner>
- Microsoft Virtual Training Days: <https://aka.ms/SynapseMVTD>
- 30-Day Cloud Skills Challenge: <https://aka.ms/SynapseSkillsChallenge>

## Samples & Accelerators

- Samples on GitHub: <https://aka.ms/SynapseSamples>
- Accelerator – End-to-End Analytics: <https://aka.ms/azsynapsee2e-git>



# Power BI Learning Resources

- Blog: <https://powerbi.microsoft.com/en-us/blog/>
- Documentation: <https://docs.microsoft.com/en-us/power-bi/>
- Community: <https://community.powerbi.com/>
- YouTube: <https://www.youtube.com/c/mspowerbi>
- Microsoft Learn: <https://docs.microsoft.com/en-us/learn/powerplatform/power-bi>
- Instructor led training („in a day“): <https://powerbi.microsoft.com/en-us/instructor-led-training/>
- Guy in a Cube YouTube channel: <https://www.youtube.com/c/GuyinaCube>
- 2022 wave 2: <https://docs.microsoft.com/en-us/power-platform-release-plan/2022wave2/power-bi/>
- Power BI Release Plan: <https://aka.ms/pbireleaseplan>





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