An Introduction to Azure Synapse Analytics

What | Why | How

Paul Andrew | Technical Architect in Azure CoE

Microsoft® MVP Most Valuable Professional

avanade

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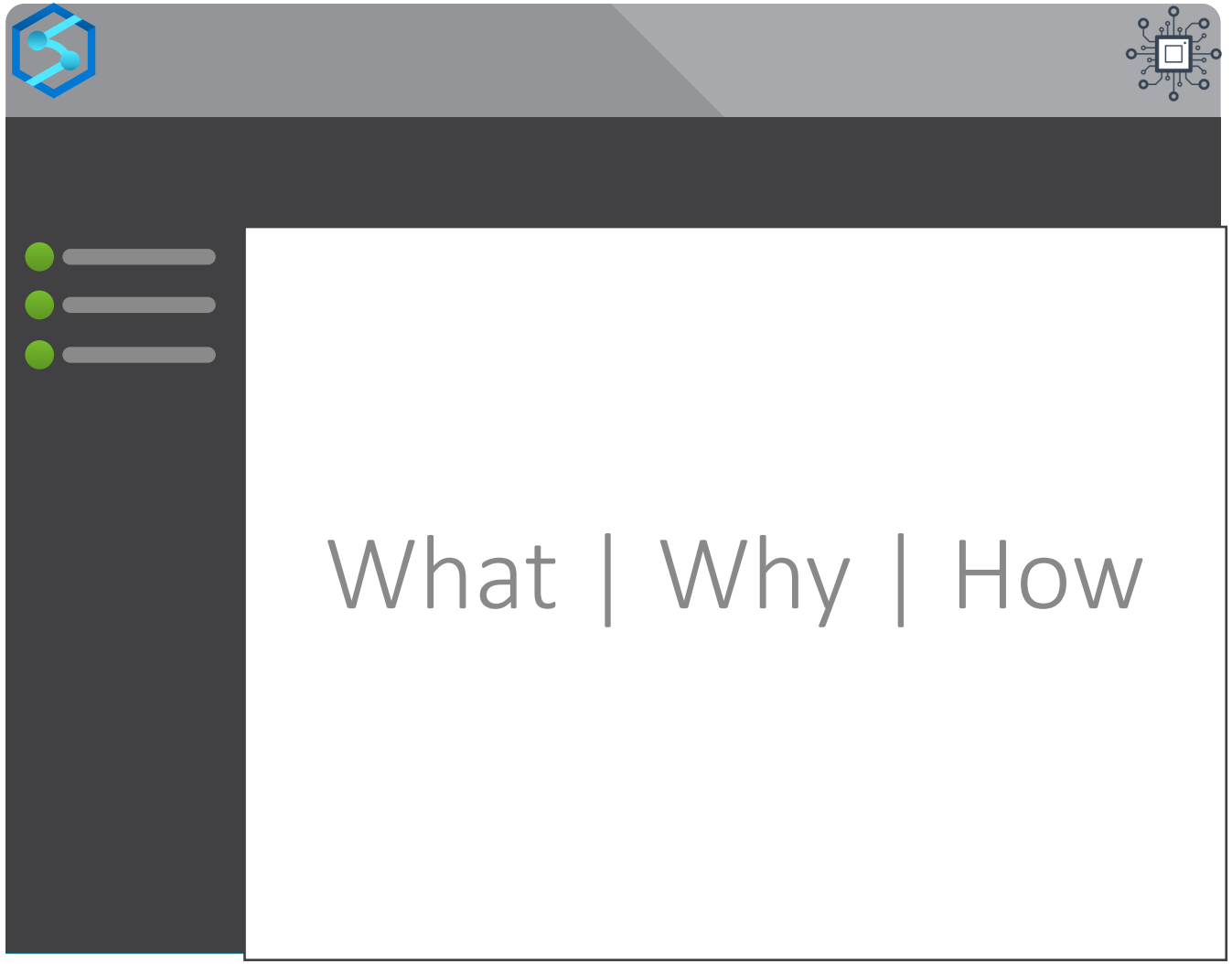
CommunityEvents

Demo code, content and slides from various community events.

C++

{Event/Location}-{Month}-{Year}

Agenda



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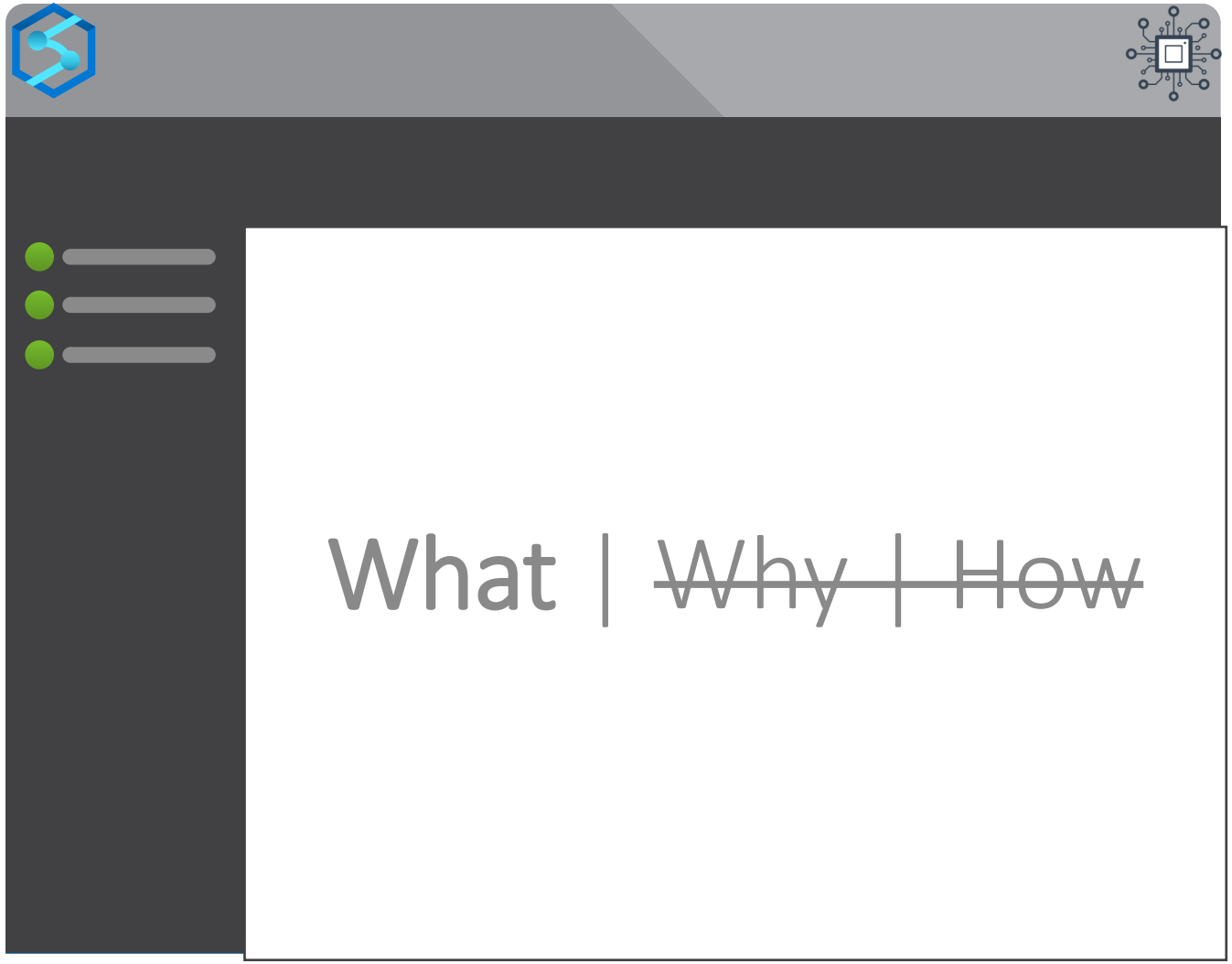
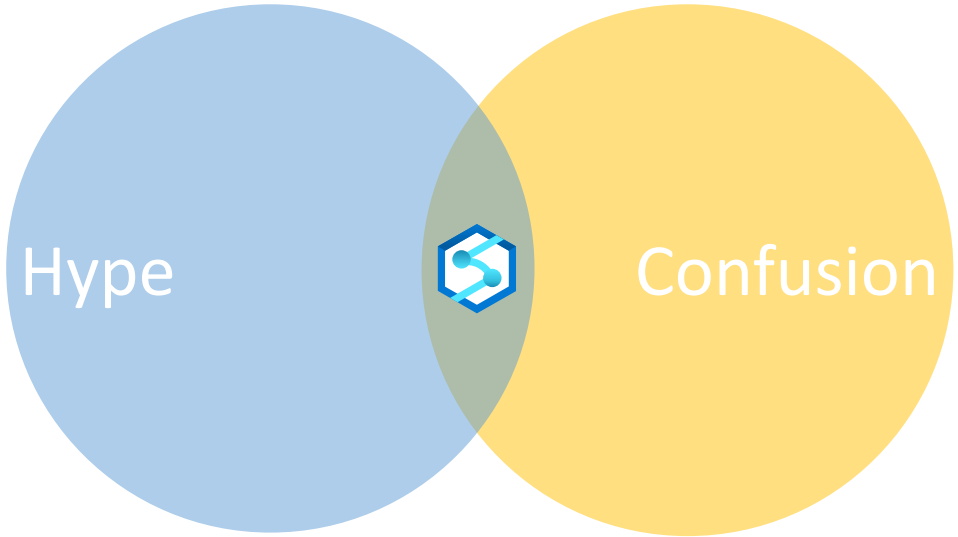


Q: What is Azure Synapse Analytics?

A: *NULL*



Q: What is Azure Synapse Analytics?

A[v1]: *Lots of things!*

A[v2]: *A complete suite of Cloud native data processing services.*

A^{v2}: *A complete suite of ~~Cloud native~~ data processing services.*

A complete suite of ~~Cloud native~~ data processing services.

Synapse is to data processing in **Azure**

what

SQL Server is to data processing **on premises**.

Synapse is to data processing in **Azure**

what

SQL Server is to data processing **on premises**.

Cosmos DB

SQL 2022

Synapse Link

Integration

Purview

Pipelines

Data Flows

Dedicated SQL Pool

Serverless SQL Pool

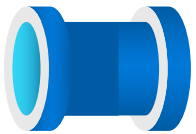
Spark Pool

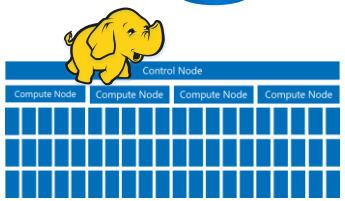
Data Explorer

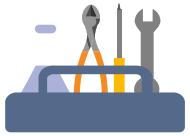
Power BI Workspace

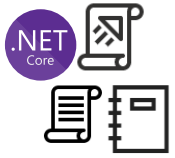
Data Lake

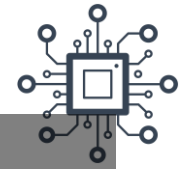
Synapse Studio











Cosmos DB

SQL 2022

Ingestion

Purview

Integration

Orchestration

Compute

Embedded

Storage

Tooling

In Terms of Established Data Platform Resources

Data Factory	Code Base Fork	Integration Pipelines
SQL Data Warehouse	Renamed	Dedicated SQL Pools
SQL Database	SQL 2014 Engine – No Storage	Serverless SQL Pool
Data Lake	Mounted Ready	Storage
Power BI	Workspace Abstraction	Power BI
HD Insight or Databricks	New Compute Implementation	Apache Spark Pools
Data Explorer	Bolted On	Data Explorer Pools

In Terms of Established Data Platform Resources

Data Factory → Code Base Fork → Integration Pipelines

SQL Data Warehouse → ed SQL Pools

SQL Database → ess SQL Pool

Data Lake

Power BI → BI

Workspace Abstraction

HD Insight or Databricks → New Compute Implementation → Apache Spark Pools

Data Explorer → Bolted On → Data Explorer Pools

Paul Andrew @mrpaulandrew · Nov 6, 2019

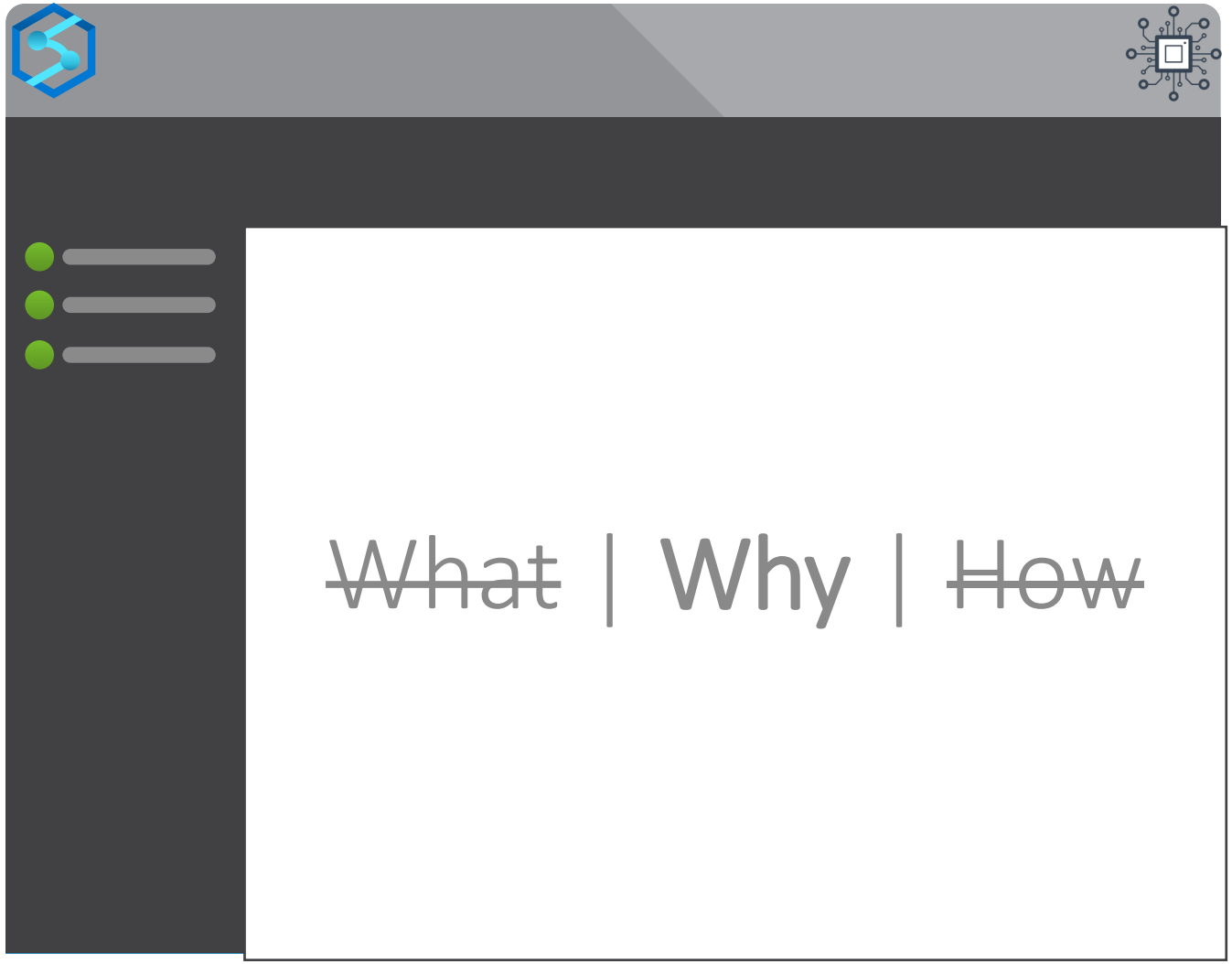
So my summary of what #Azure Synapse is in terms of tech we already know after the keynote...

Data Factory
SQLDW/SQLDB
Polybase
Spark
PowerBI

All in one place! #PASSSummit

2 8 27

Agenda



Based on Microsoft Marketing

https://azure.microsoft.com/en-gb/services/synapse-analytics/

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Azure Synapse Analytics

Limitless analytics service with unmatched time to insight

Start free Already an Azure customer? Get started >

Product overview Features Security Pricing Getting started Documentation Customer stories Updates FAQs

Experience a new class of analytics

Azure Synapse Analytics is a limitless analytics service that brings together data integration, enterprise data warehousing, and big data analytics. It gives you the freedom to query data on your terms, using either serverless or dedicated resources—at scale. Azure Synapse brings these worlds together with a unified experience to ingest, explore, prepare, manage, and serve data for immediate BI and machine learning needs.

See the new features

"… stitching together a multitude of services…

… resulting in brittle high maintenance architectures."

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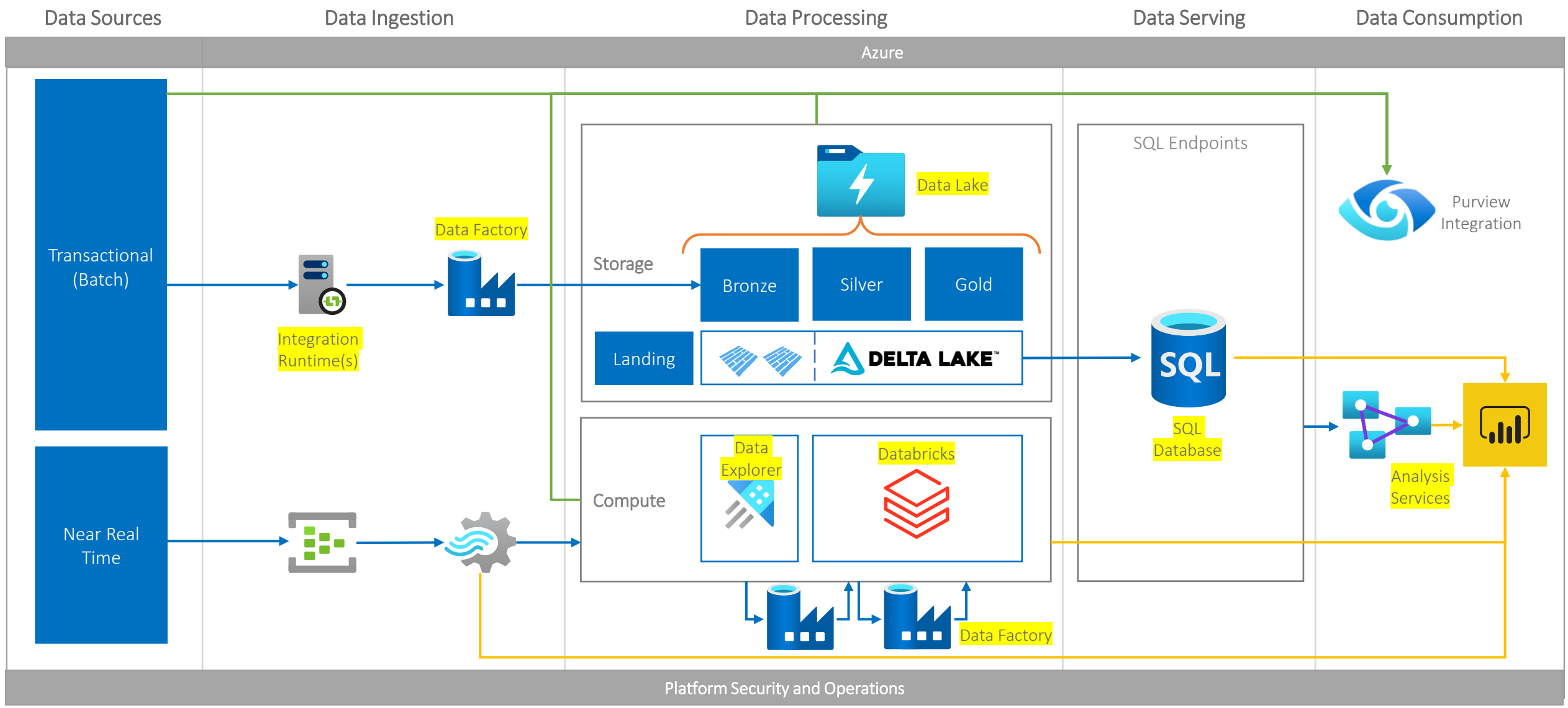
See the new features

Considering a Logical Architecture

Data Sources	Data Ingestion	Data Processing	Data Serving	Data Consumption
Azure				
Platform Security and Operations				

Considering a Logical Architecture



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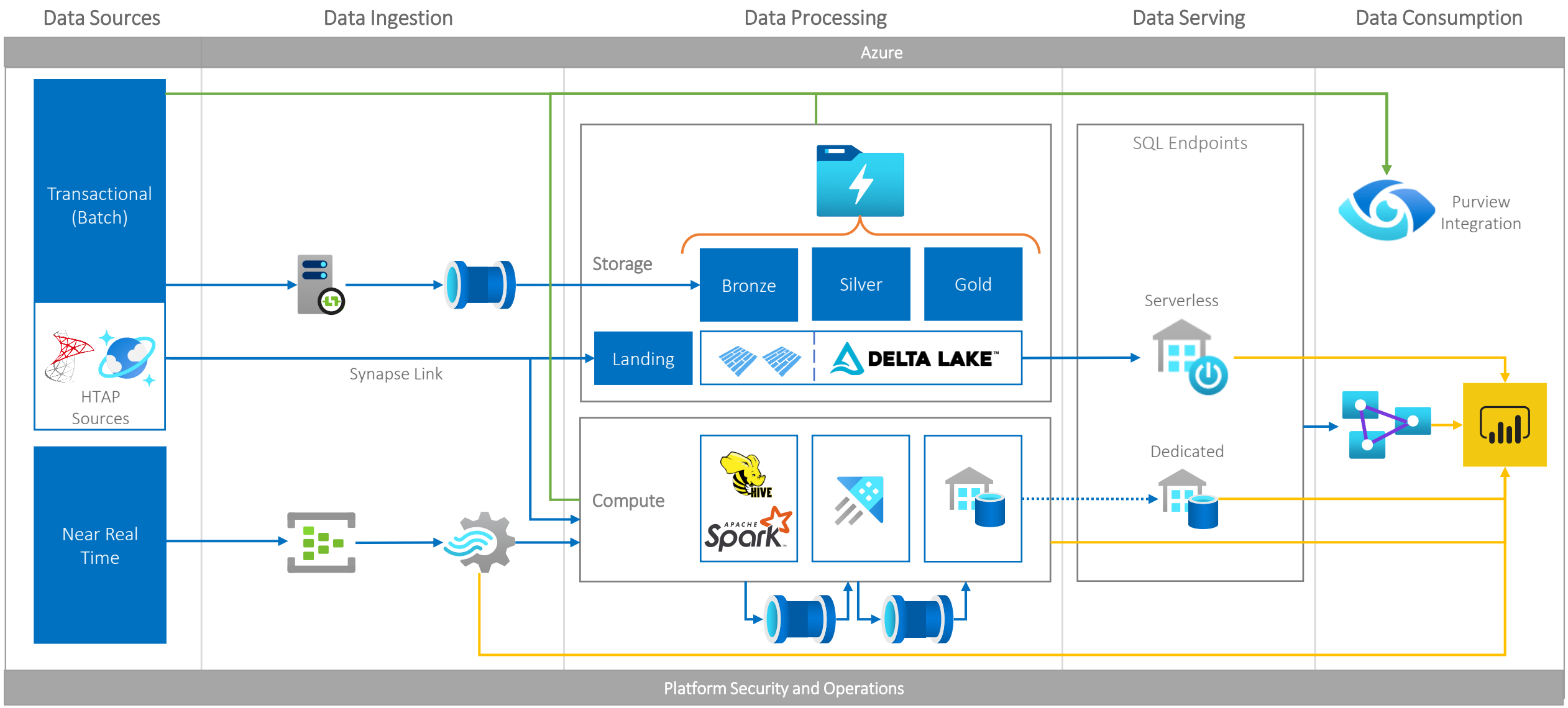

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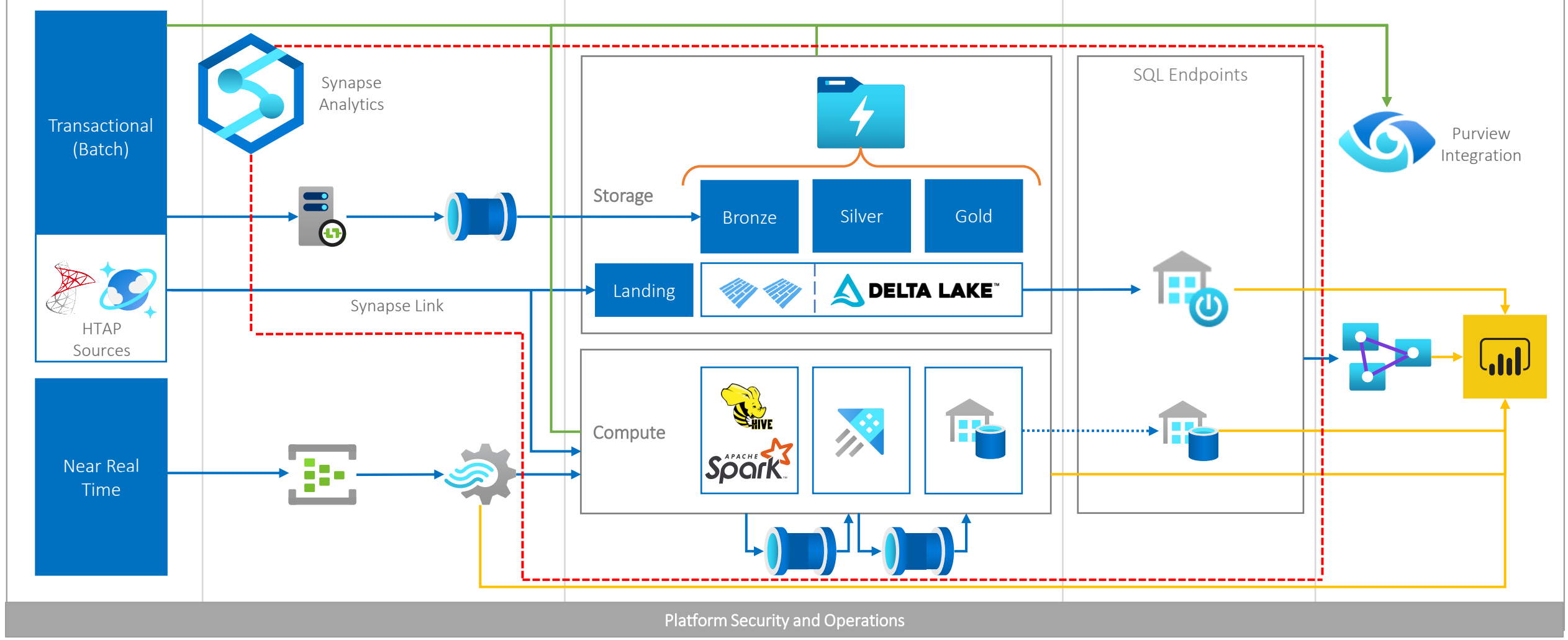

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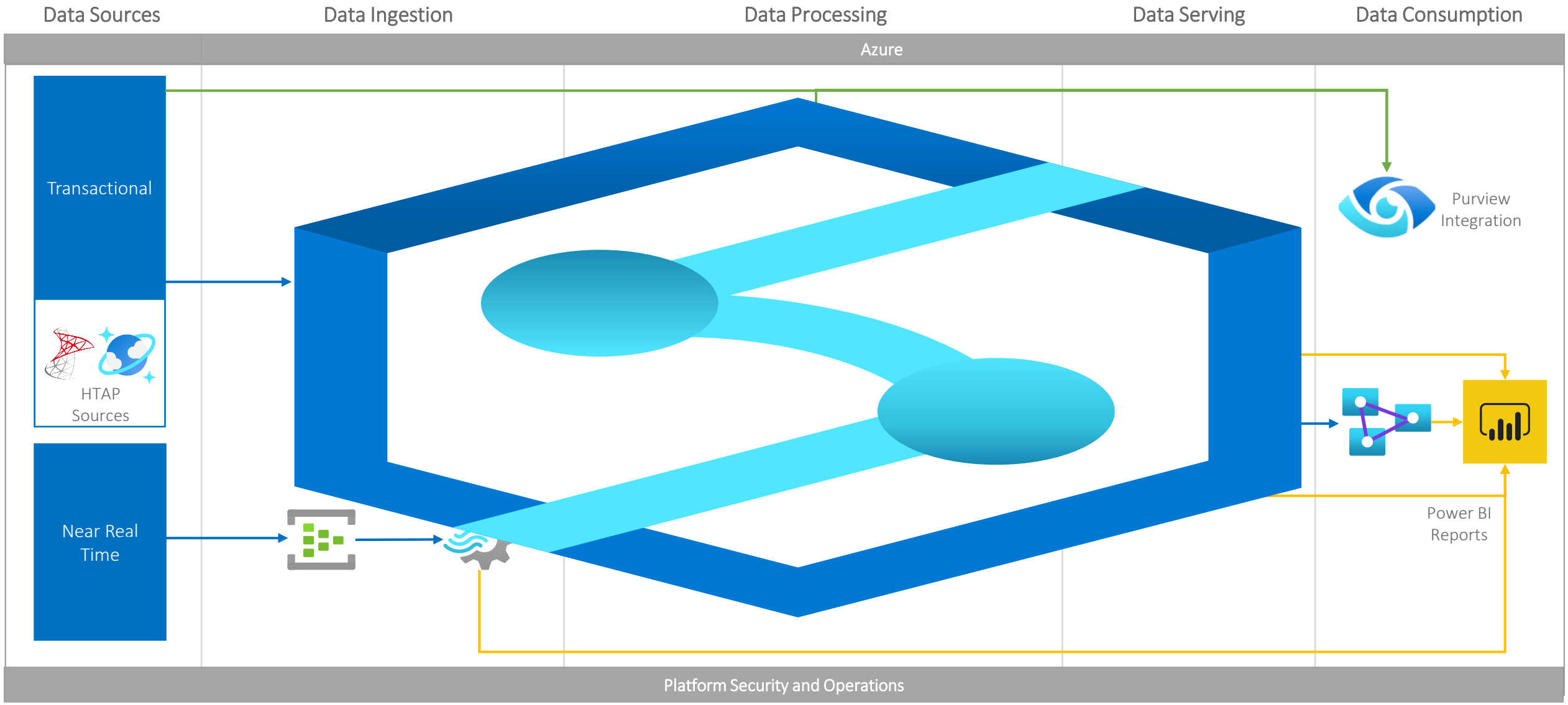

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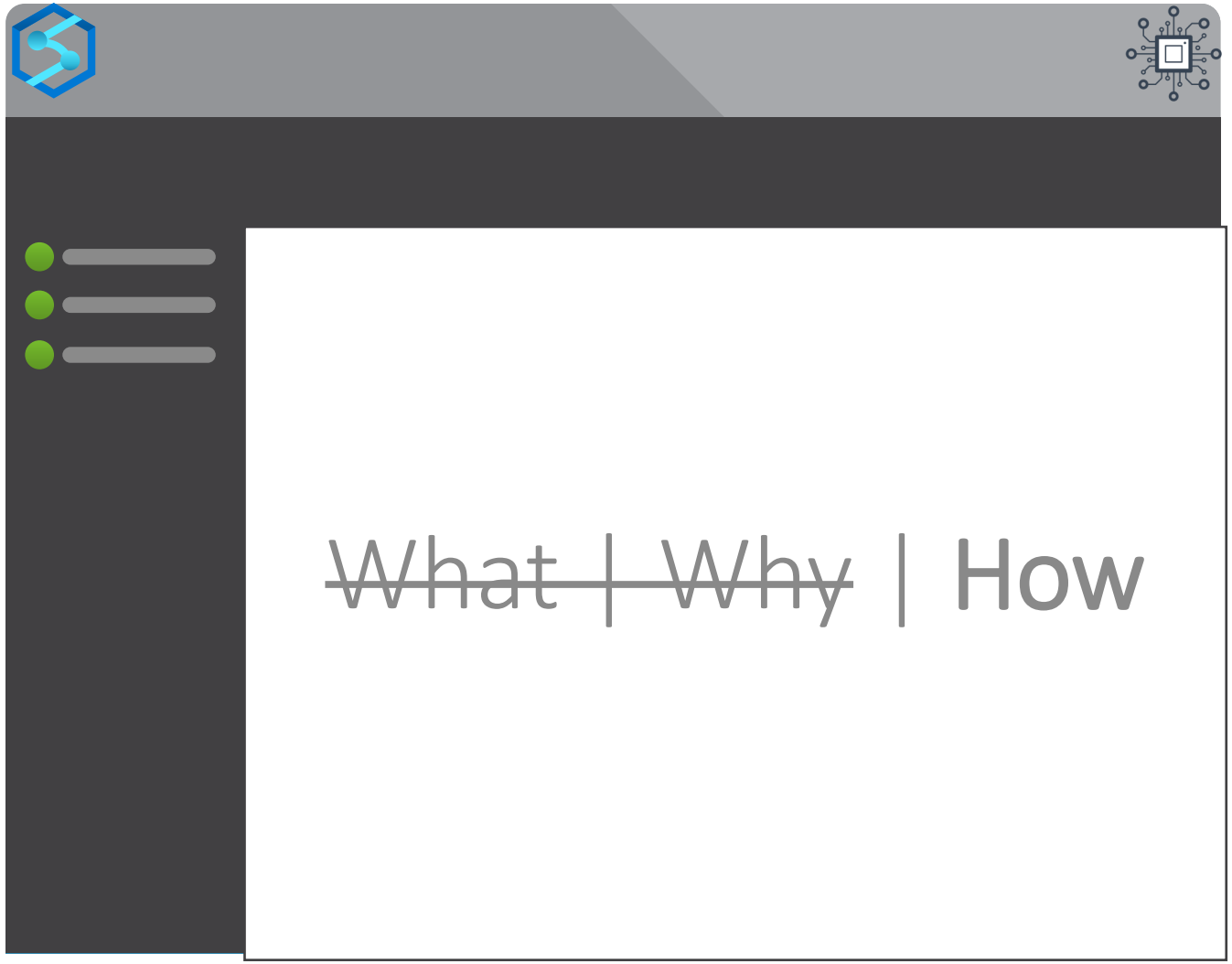
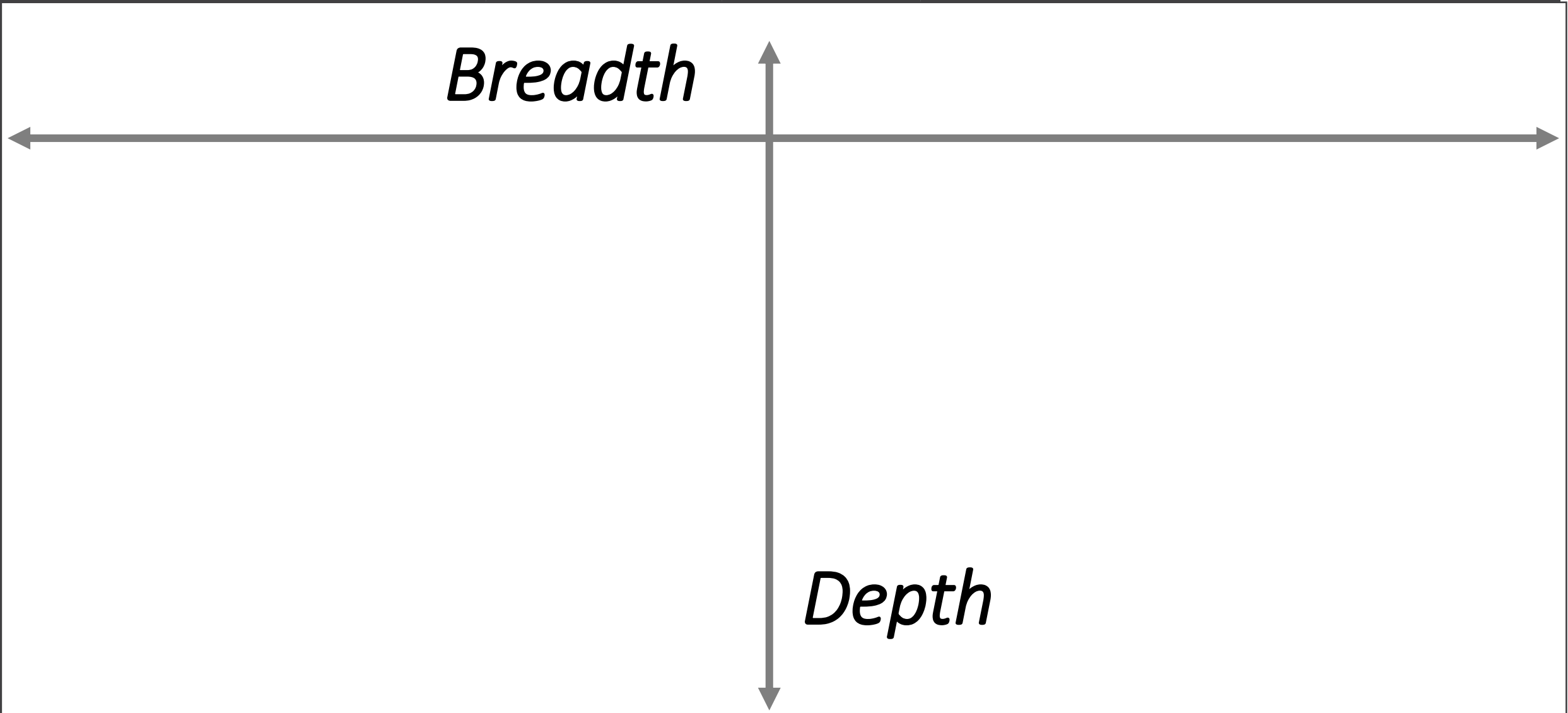


Technology Perspective



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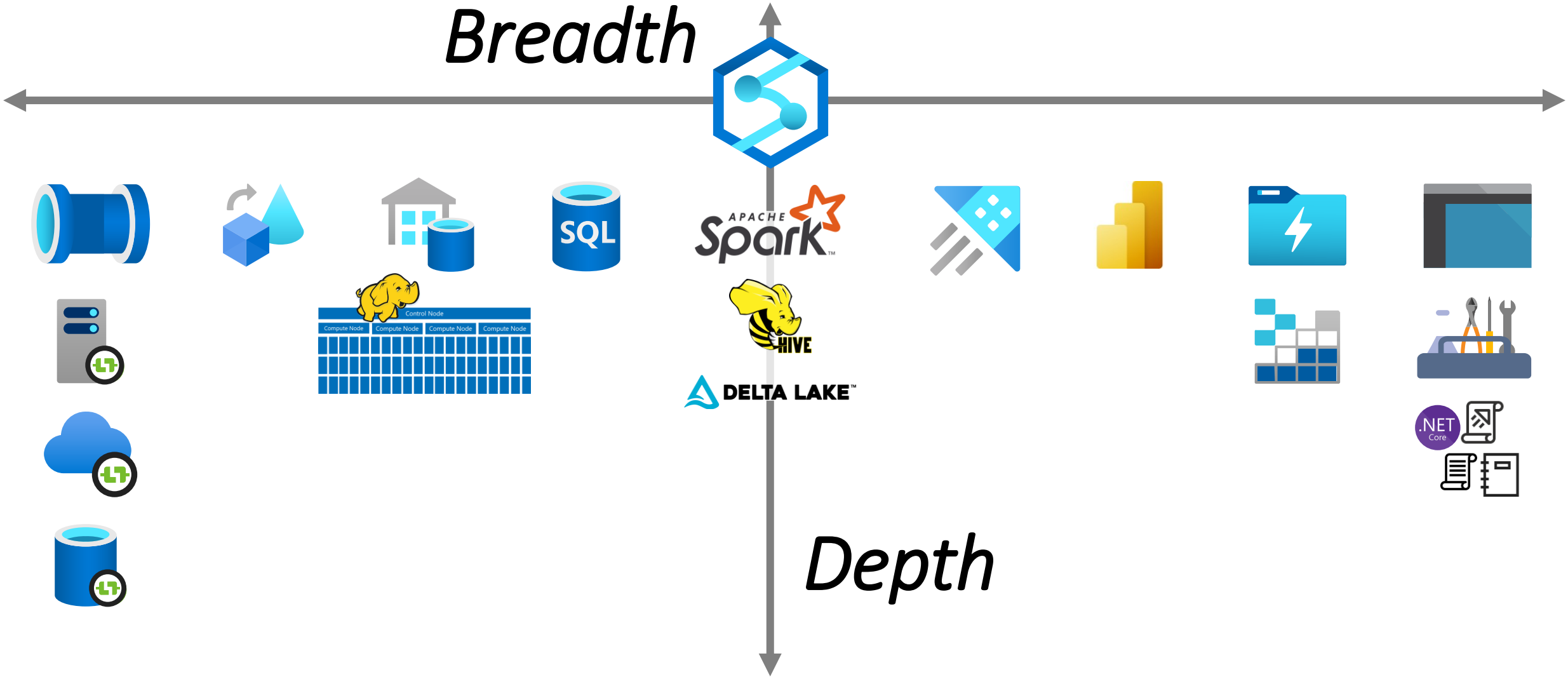

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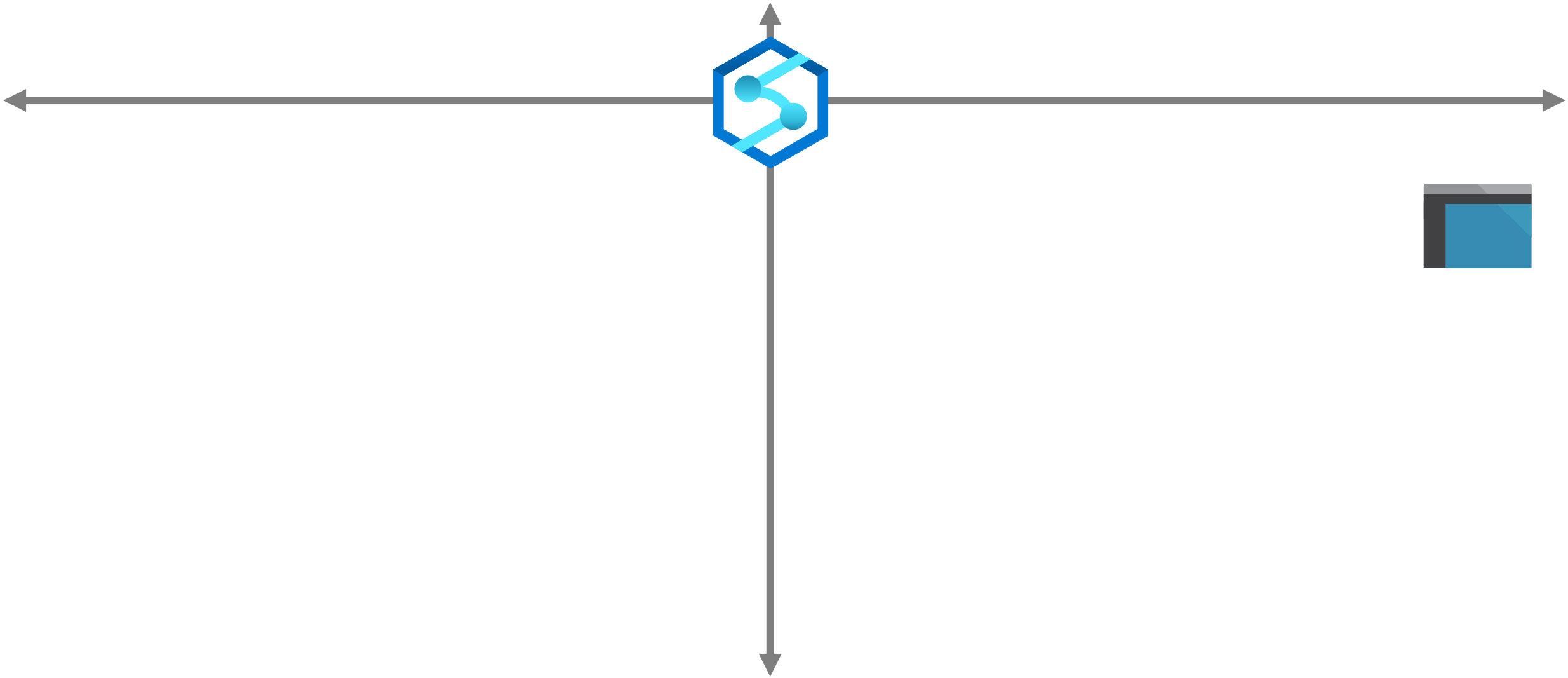
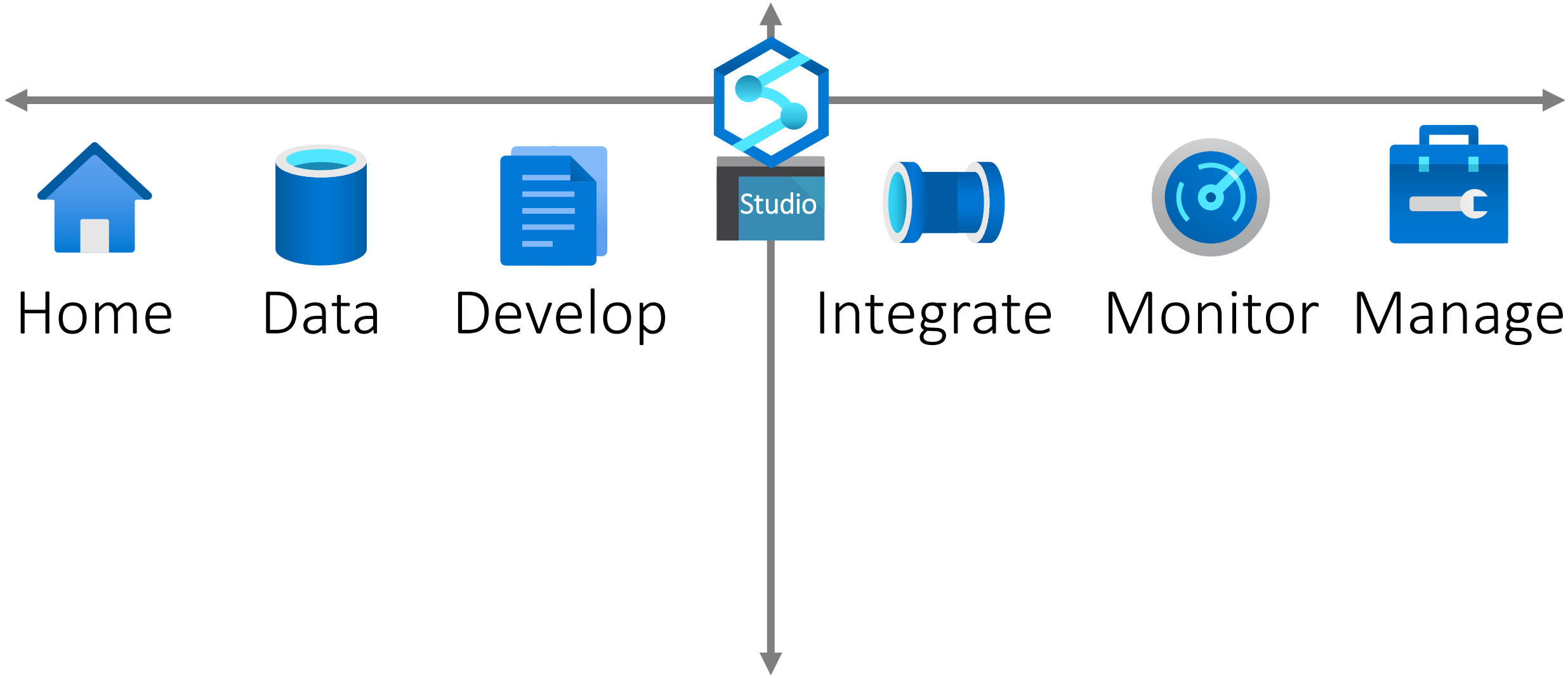
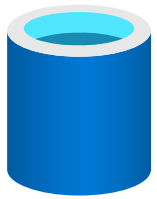
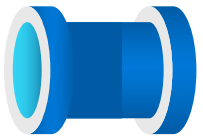


Use Case Perspective



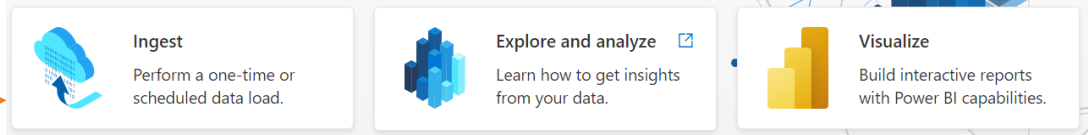
Use Case Perspective





Synapse Hubs

Home

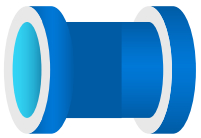


Data

- Workspace
  - SQL database
  - Lake database
  - Data Explorer database (preview)
- Linked
  - Connect to external data
  - Integration dataset
  - Browse gallery

Develop

- SQL script
- KQL script
- Notebook
- Data flow
- Apache Spark job definition
- Browse gallery
- Import



Integrate

- Pipeline
- Link connection (Preview)
- Copy Data tool
- Browse gallery
- Import from pipeline template

Monitor

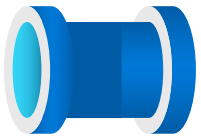
Manage

Synapse Hubs

Home

Data

Develop



Integrate

Monitor

Manage

Analytics pools

- SQL pools
- Apache Spark pools
- Data Explorer pools (preview)

Activities

- SQL requests
- KQL requests
- Apache Spark applications
- Data flow debug

Integration

- Pipeline runs
- Trigger runs
- Integration runtimes
- Link connections

Analytics pools

- SQL pools
- Apache Spark pools
- Data Explorer pools (preview)

External connections

- Linked services
- Microsoft Purview

Integration

- Triggers
- Integration runtimes

Security

- Access control
- Credentials
- Managed private endpoints

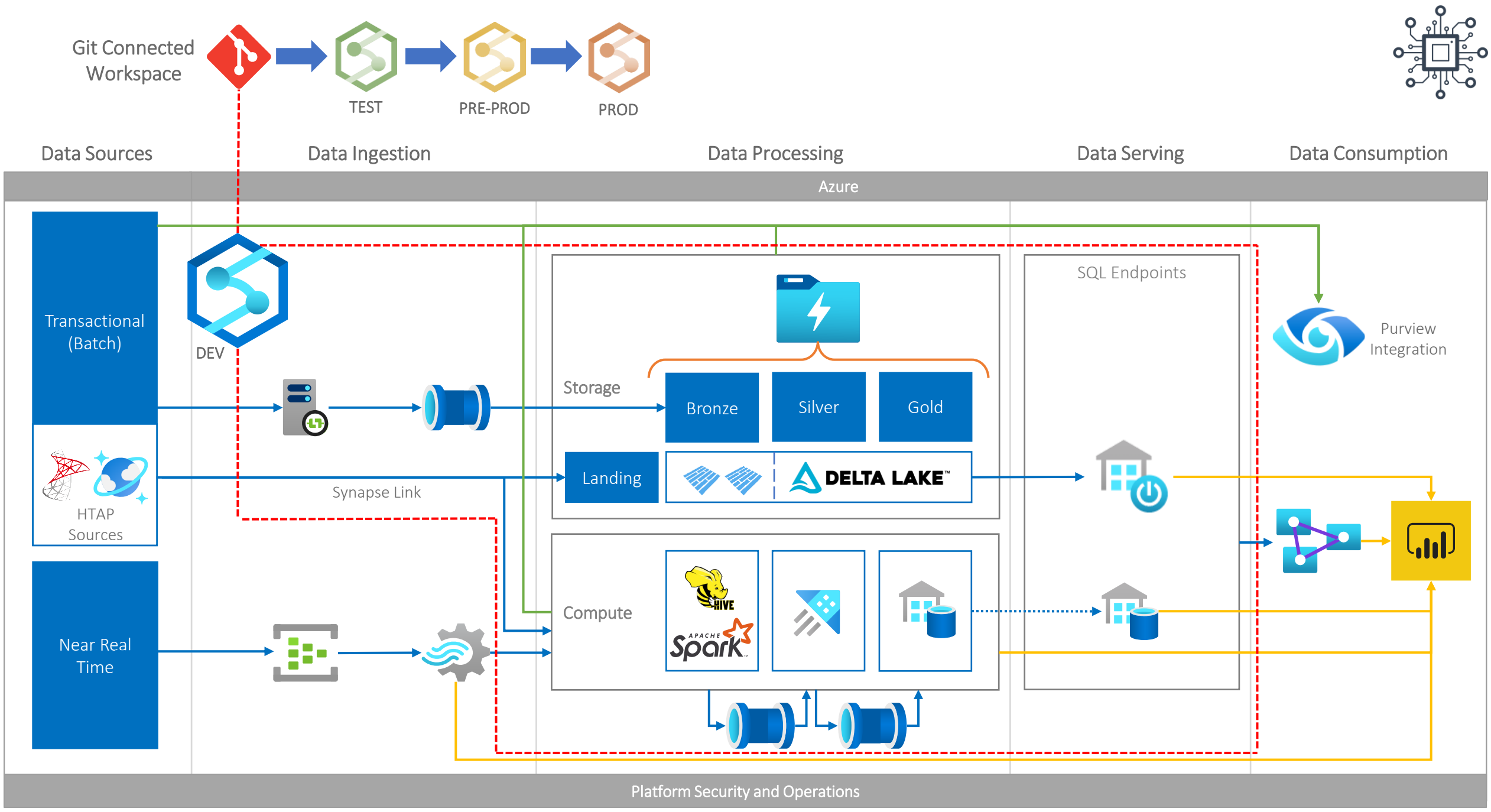
Configurations + libraries

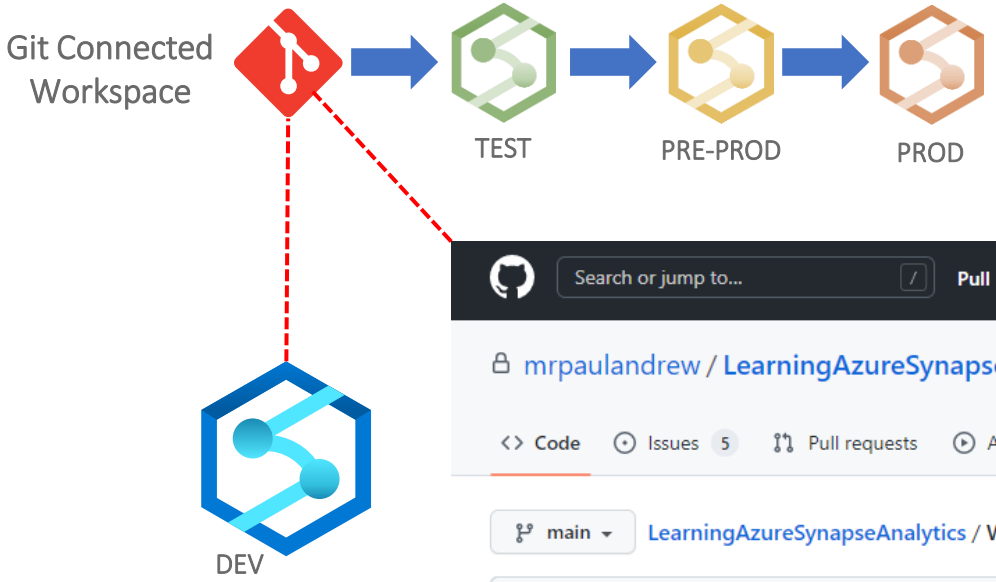
- Workspace packages
- Data flow libraries
- Apache Spark configurations

Source control

- Git configuration

Demo


Git Connected Workspace
TEST
PRE-PROD
PROD
Data Sources
Data Ingestion
Data Processing
Data Serving
Data Consumption
Azure
Transactional (Batch)
DEV
HTAP Sources
Synapse Link
Near Real Time
Storage
Bronze
Silver
Gold
Landing
DELTA LAKE
Compute
HIVE
APACHE Spark
SQL Endpoints
Purview Integration
Platform Security and Operations



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Code Issues 5 Pull requests Actions Projects 1 Security Insights Settings

main LearningAzureSynapseAnalytics / Workspace / Go to file Add file ...

e942bb6 8 days ago History

..		
database	Adding database: Database1	20 days ago
dataflow	Updating dataflow: OrderHeaderRawtoClean	18 days ago
dataset	Adding dataset: OrderHeaderCsv	3 months ago
integrationRuntime	Deleting integrationRuntime: AzureIR-8core	2 months ago
kqlscript	Updating kqlscript: Tweets Table	14 days ago
linkedService	Updating linkedService: GitHub	3 months ago
notebook	Adding notebook: Chapter05-fctSales_Copy1	8 days ago
pipeline	Updating pipeline: Clean to Modelled via SQL	9 days ago
sqlscript	Updating sqlscript: _Select Delta Tables	16 days ago
publish_config.json	Create publish_config.json	6 months ago

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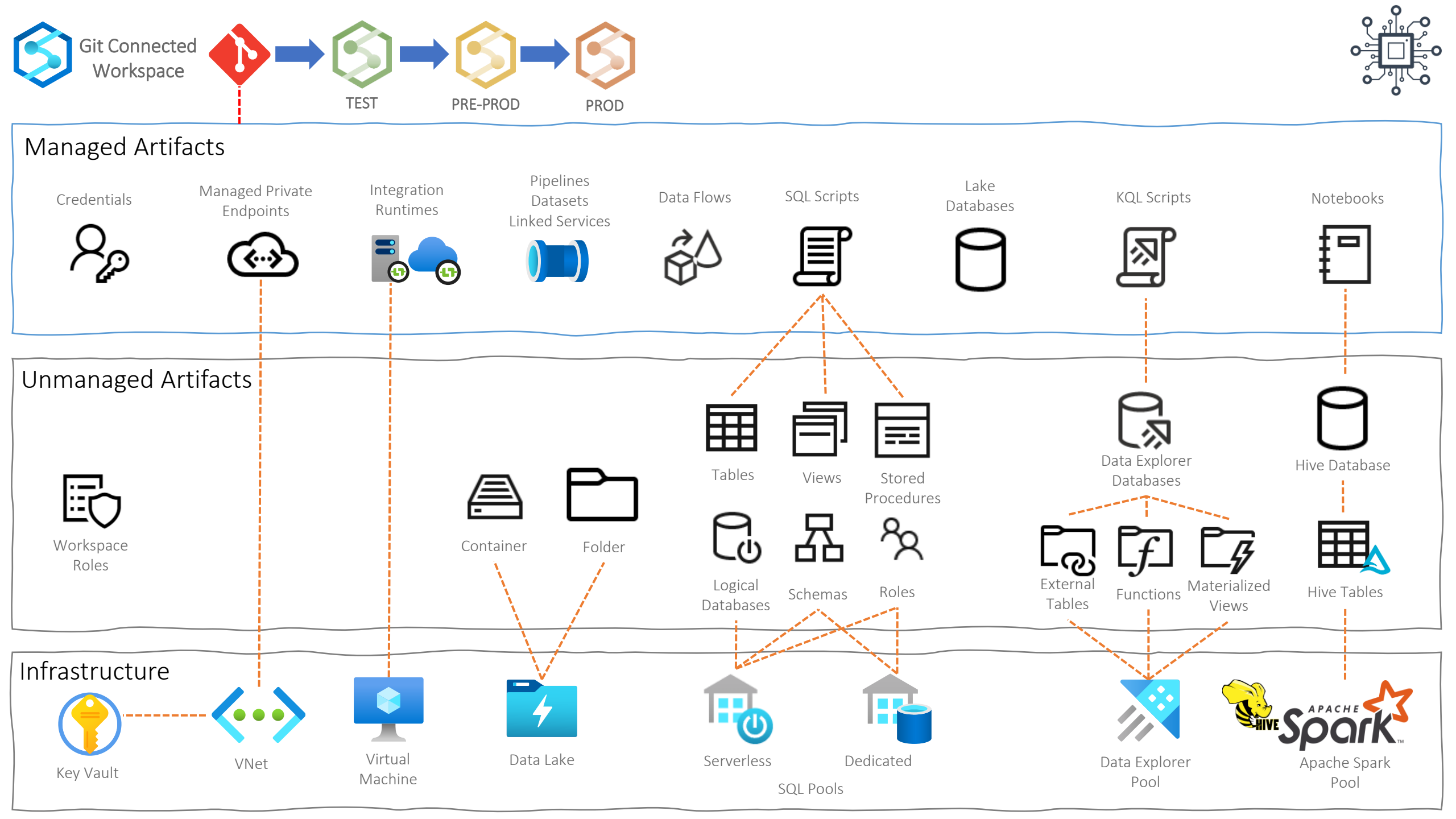
Git Connected Workspace
TEST
PRE-PROD
PROD
Managed Artifacts
Credentials
Managed Private Endpoints
Integration Runtimes
Pipelines
Datasets
Linked Services
Data Flows
SQL Scripts
Lake Databases
KQL Scripts
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Unmanaged Artifacts
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Stored Procedures
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Schemas
Roles
Data Explorer Databases
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External Tables
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Materialized Views
Hive Tables
Infrastructure
Key Vault
VNet
Virtual Machine
Data Lake
Serverless
Dedicated
SQL Pools
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External Tables

Functions

Materialized Views

Hive Tables

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VNet

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Data Lake

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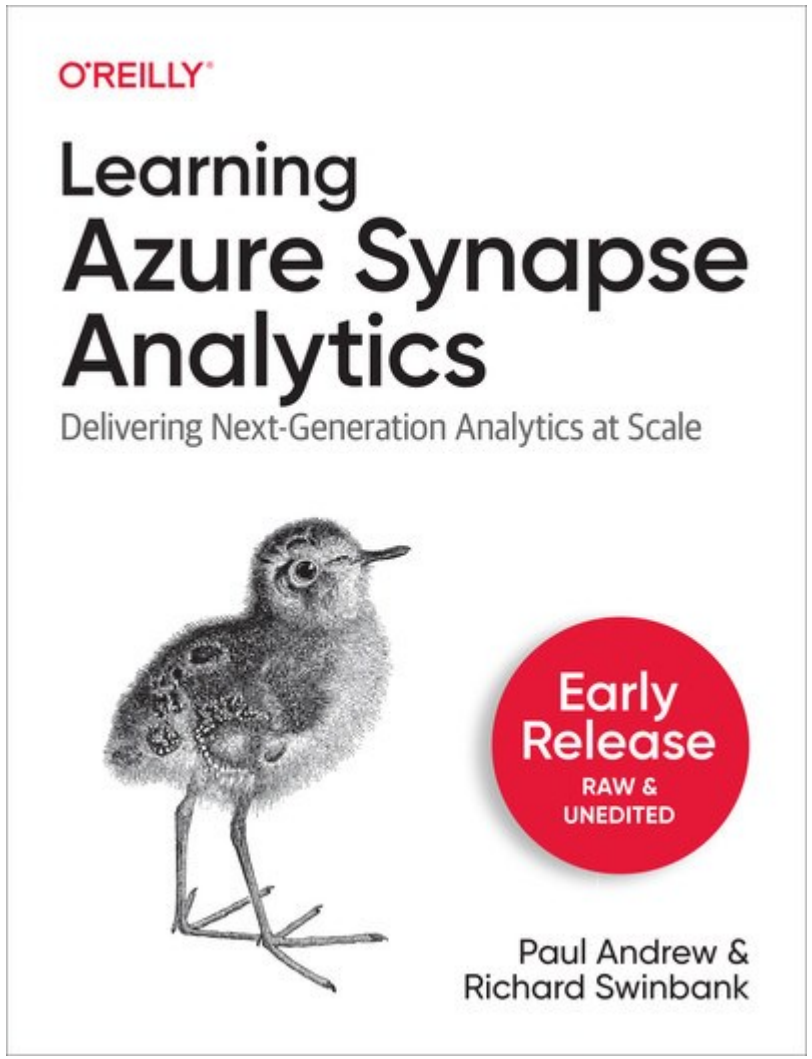
Dedicated SQL Pools

Data Explorer Pool

Apache Spark Pool

Book Coming Soon!



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Thank you for listening…

Paul Andrew

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