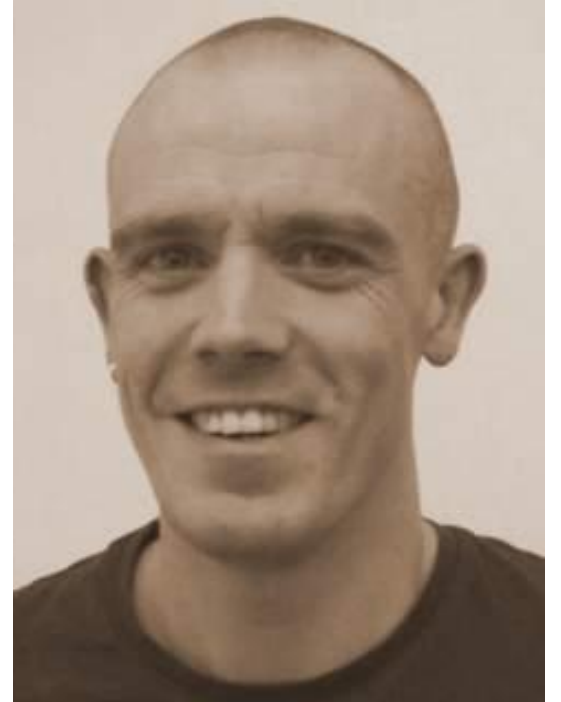# End-to-end Business Intelligence solution in Azure

Just Thorning Blindbæk

▸ Consultant in justB

▸ Trainer at Orange Man

▸ Founder and leader of MsBIP Denmark

▸ 10+ years of experience with Microsoft BI

▸ just@blindbaek.dk / blog.justB.dk / @justblindbaek

Microsoft
CERTIFIED
Trainer

Microsoft
CERTIFIED
IT Professional

SSAS
MAESTRO
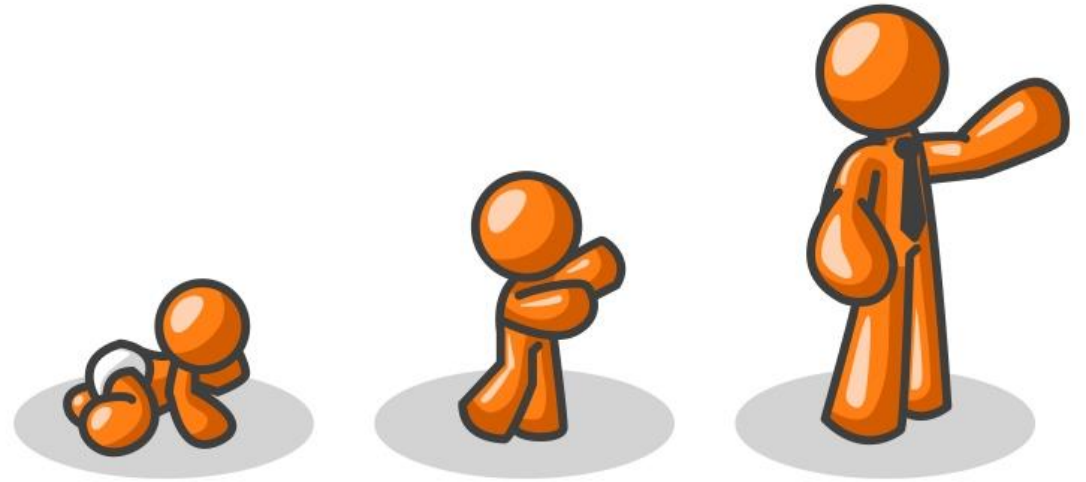by Microsoft

MVP **Microsoft**®
Most Valuable
Professional

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Agenda

- The project
- The architecture
  - Ingest
  - Store
  - Prep and train
  - Model and serve
  - Presentation
  - Orchestration
- Wrapping up

Arlagården Plus

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The Project
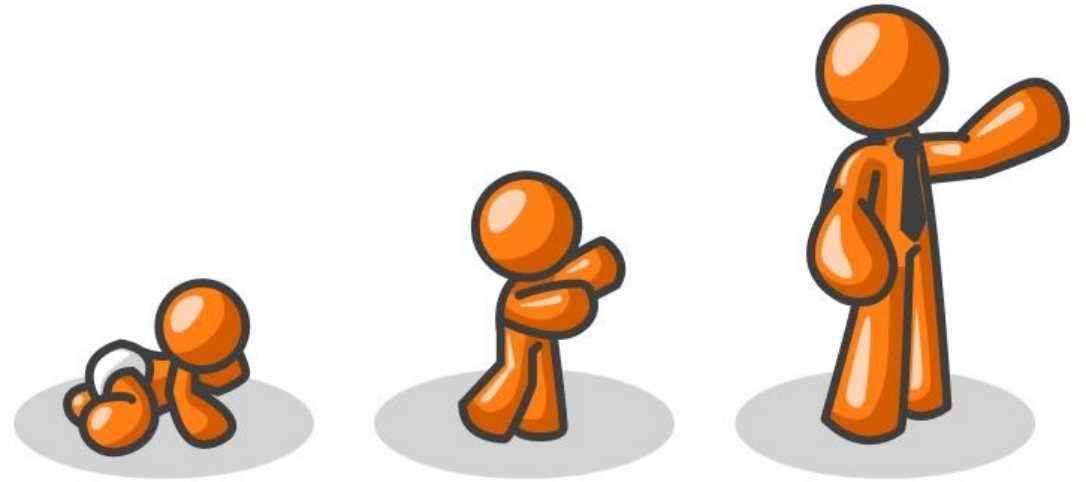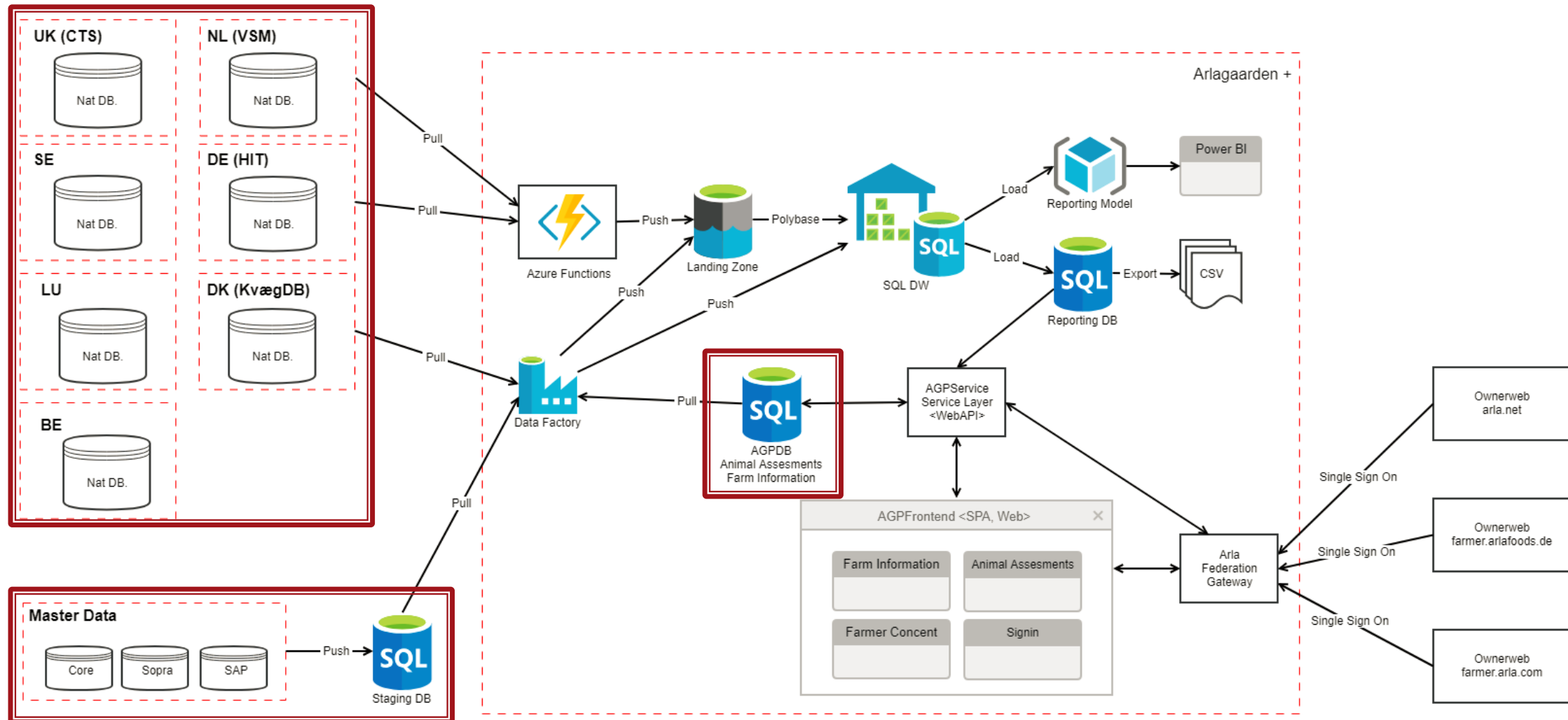
The project: Arlagården Plus

▸ Quality Assurance Program

- 11.000 suppliers in 7 European countries
- Opt-in gives 1 Eurocent per kg delivered milk
- Story telling: Makes the milk worth more
- Retail requirements to document wellbeing and sustainability

▸ Collect data and calculate animal welfare indicators

- Master data (SAP, Sopra, CORE)
- Survey and assessment (Web app)
- National herd and animal databases

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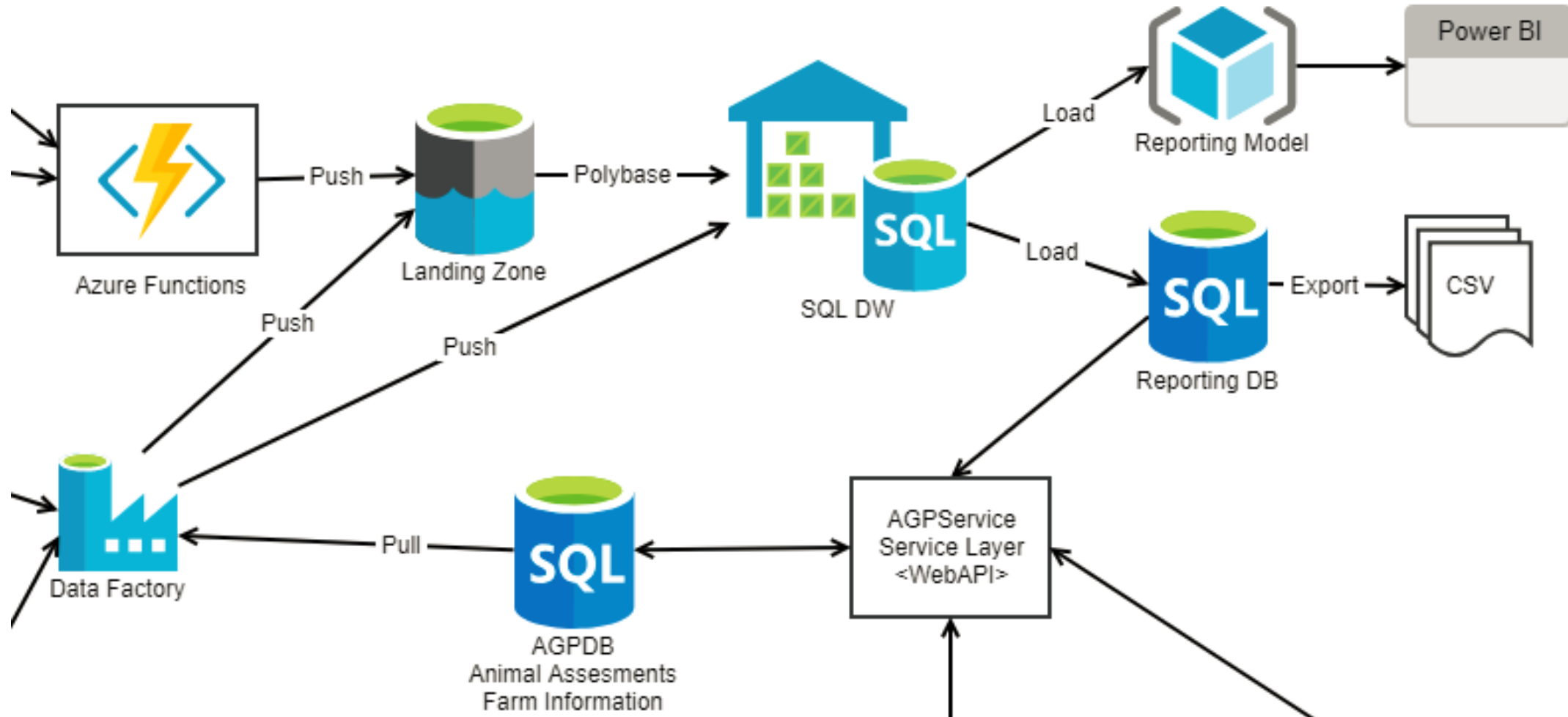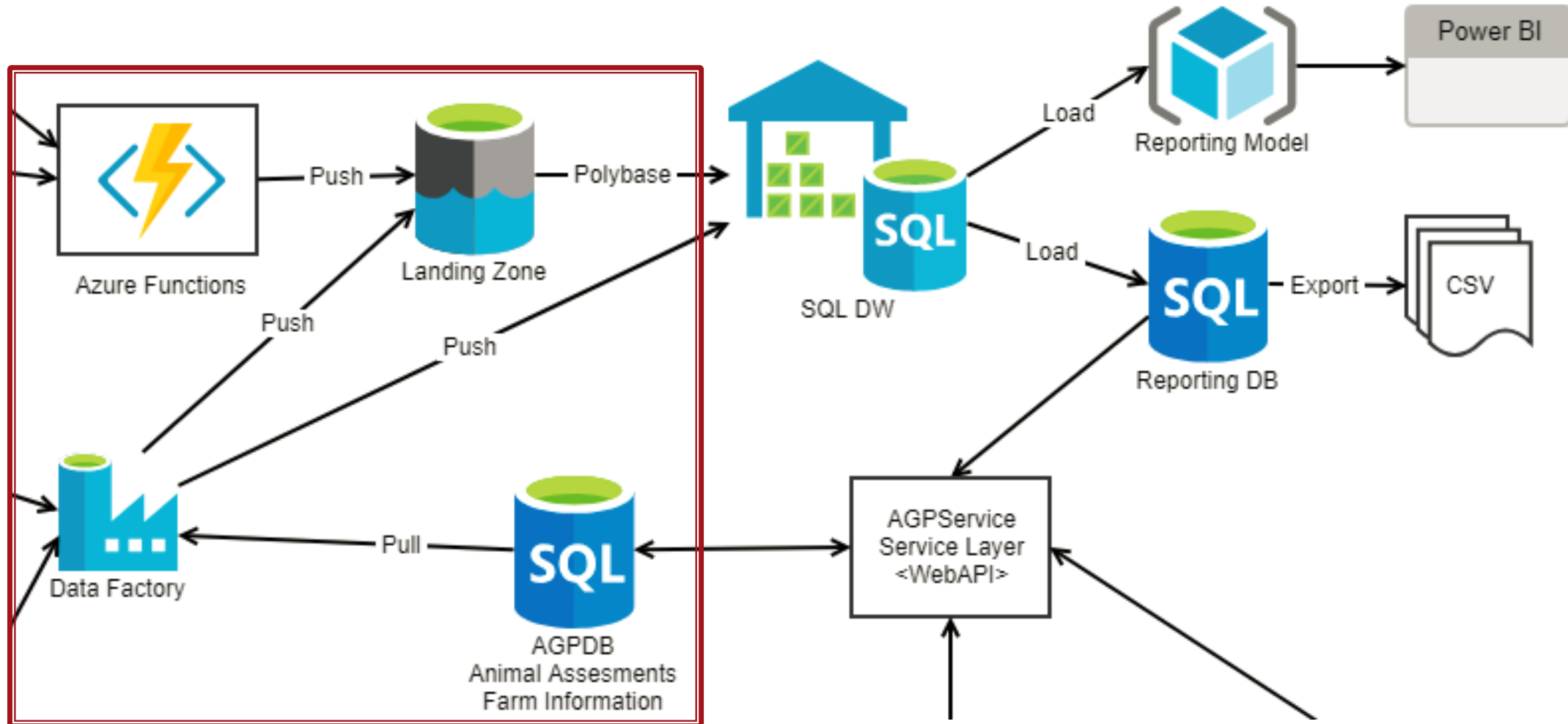# The architecture

Overall architecture

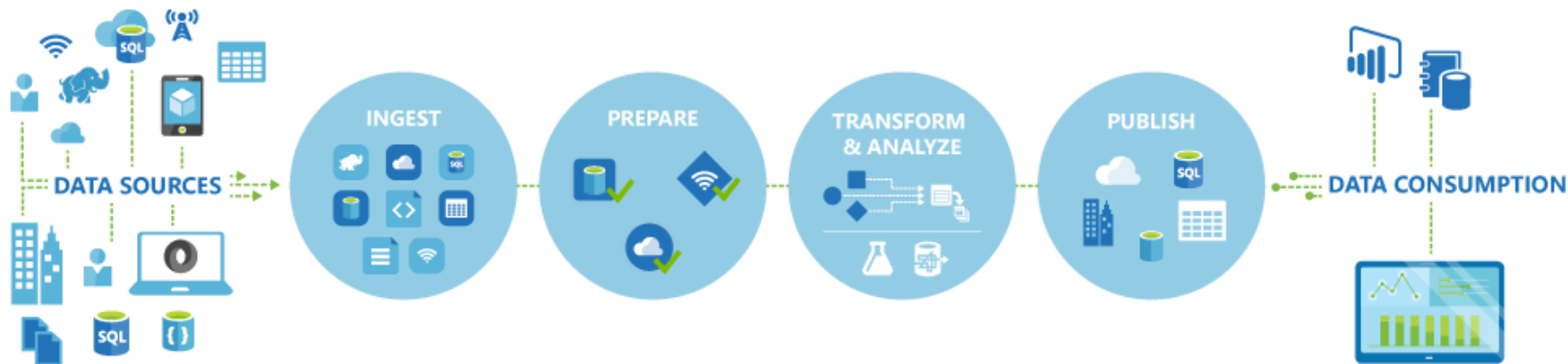# BI architecture
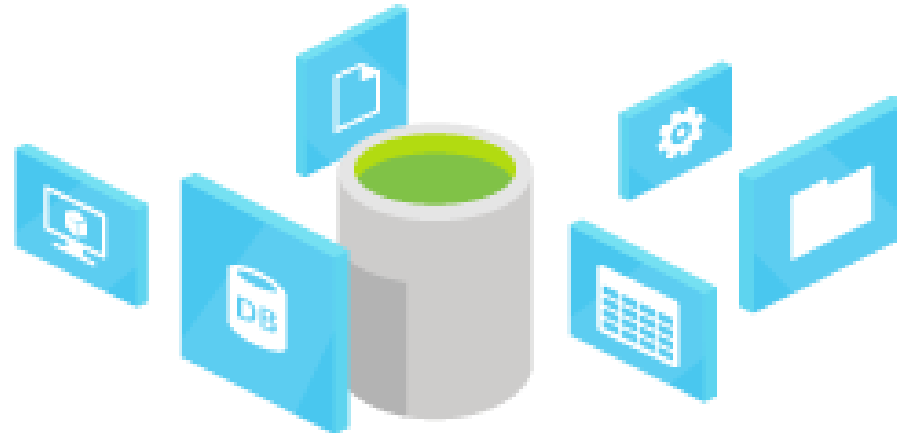

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Ingest and Store (Extract)

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Ingest: Azure Data Factory V2

▸ Hybrid data integration at scale

▸ Create, plan, administer and monitor data pipelines

▸ Execute activities (copy or transform)
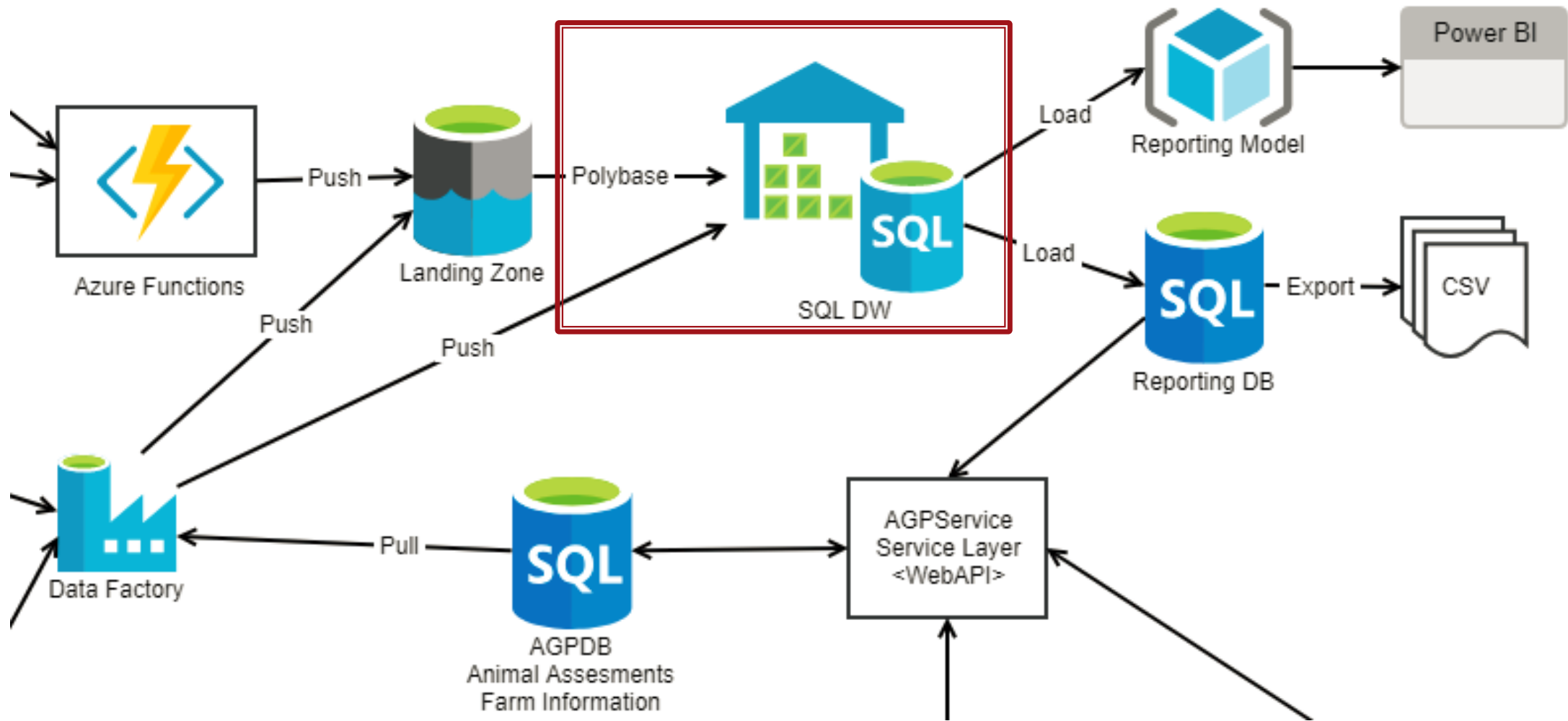
▸ V2 has parameters, control flow and triggers

Store: Azure Data Lake Store

- Unlimited cheap cheap cheap storage
- Can handle structured, semi-structured, and unstructured data
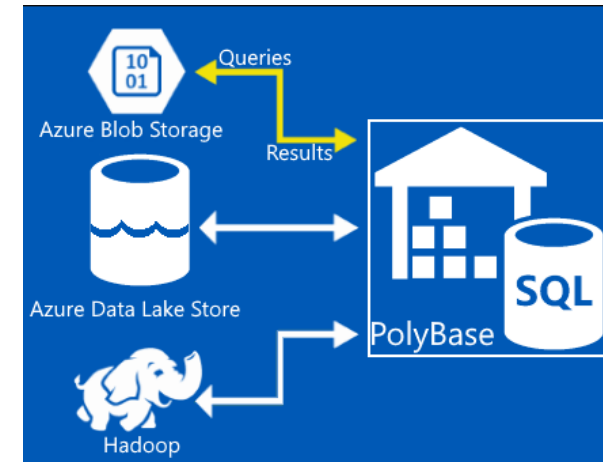- Apache Hadoop file system compatible (HDFS)

- Now we have Gen2 – combining Azure Blob Storage

Prep and model (Transform)

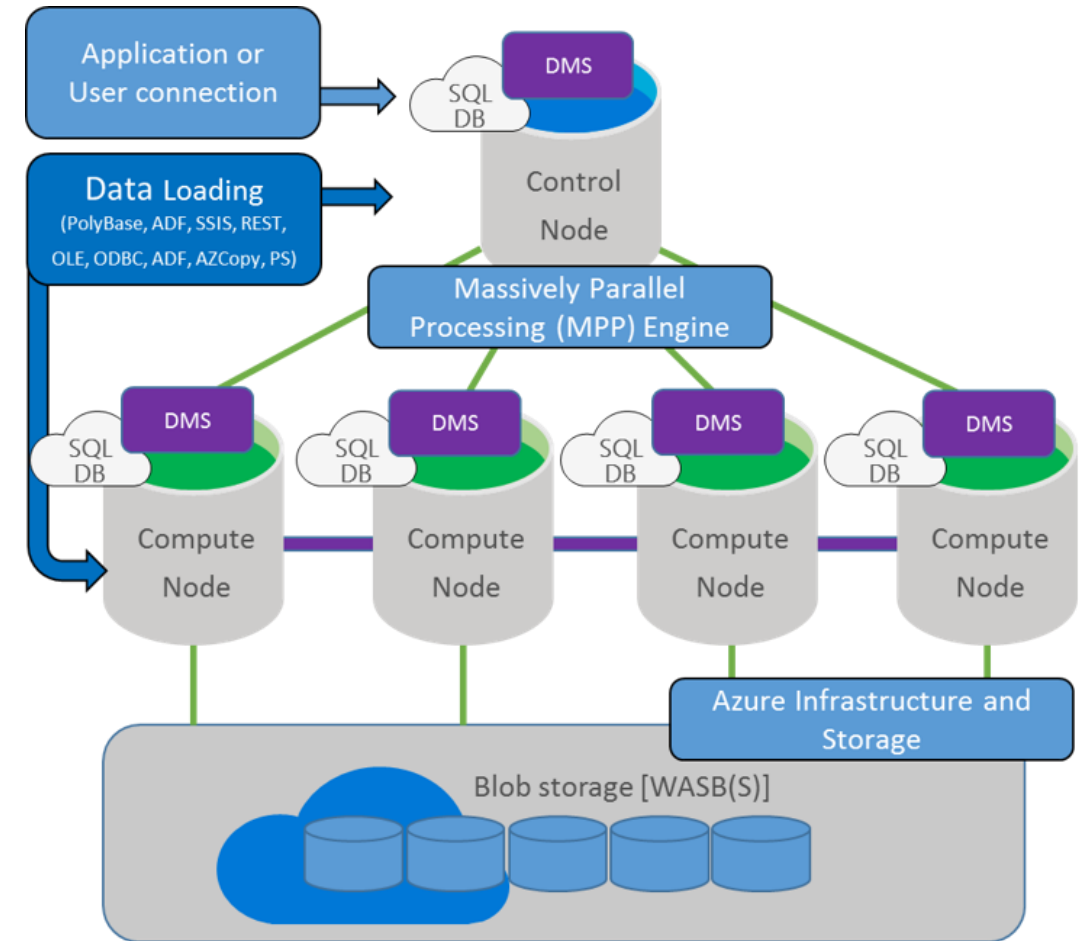
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Prep: PolyBase

▸ Best practice data loading technique from Azure Data Lake Store to Azure SQL DW

▸ Massively Parallel Processing Architecture

▸ External data source
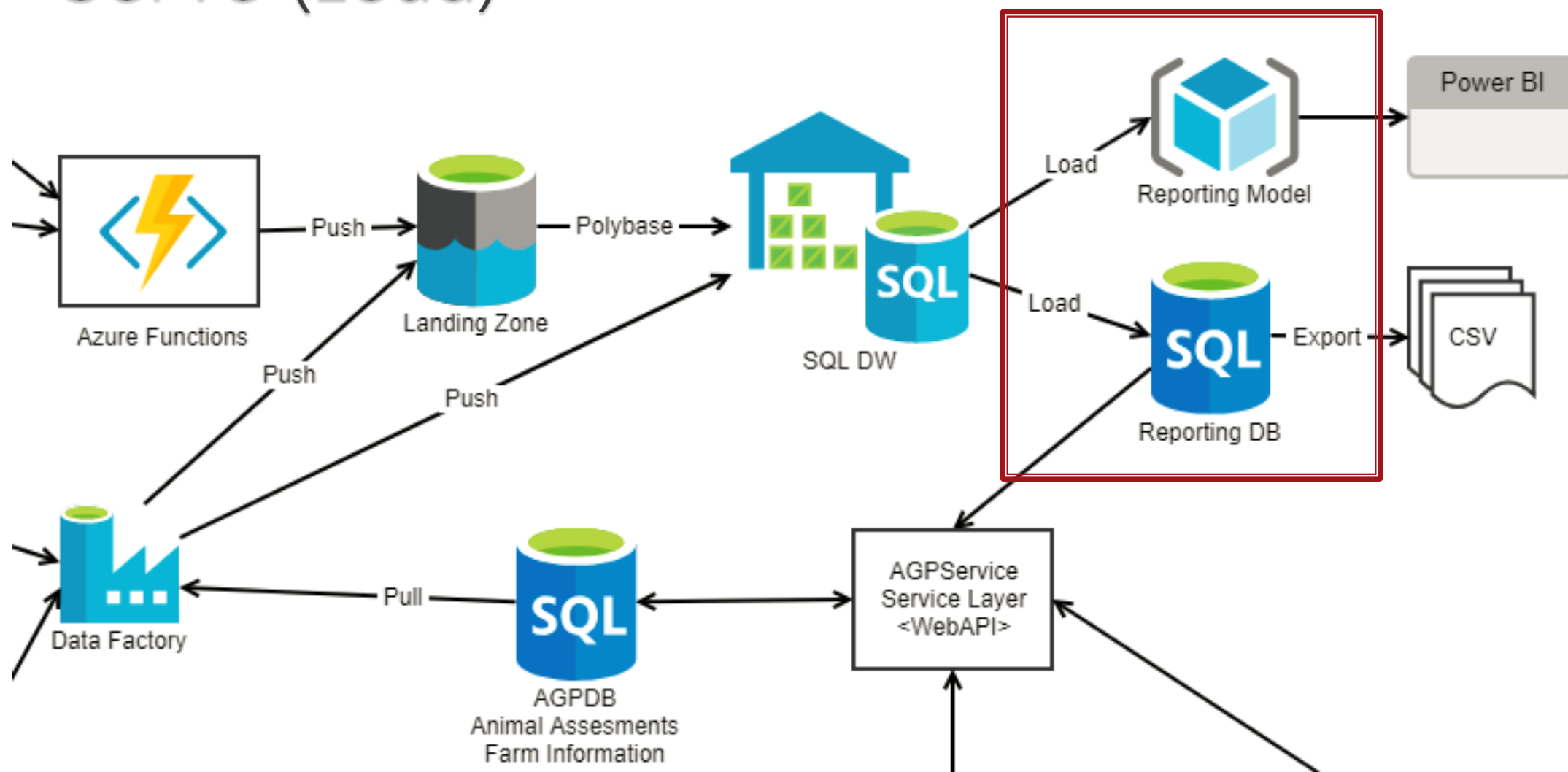
▸ External tables

▸ CTAS – Create Table As Select

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Prep and Model: Azure SQL Data Warehouse

- Built on SQL Server
- MPP architecture
- Pause and scale
- Limited concurrency

- Alternatives:
  - Azure SQL DB
  - Azure Databricks
  - Azure HDInsight
  - (Azure Data Lake Analytics)
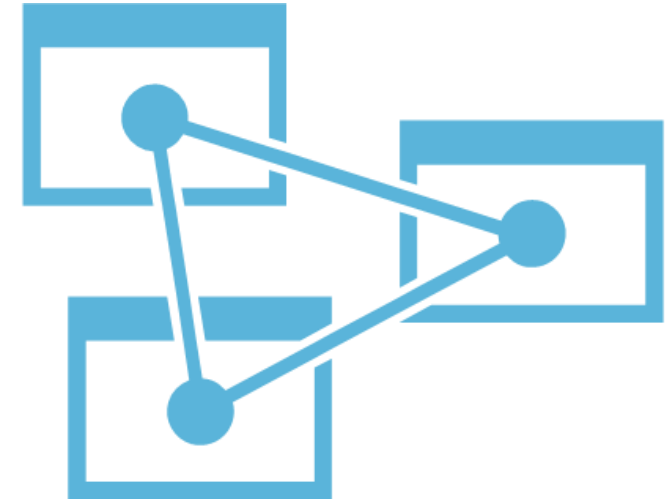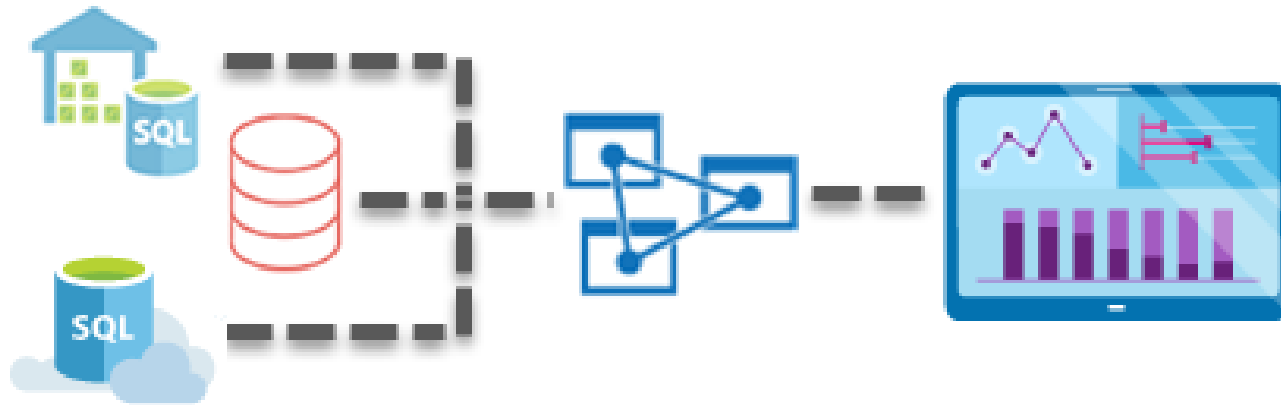
Serve (Load)

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Serve: Azure SQL Database
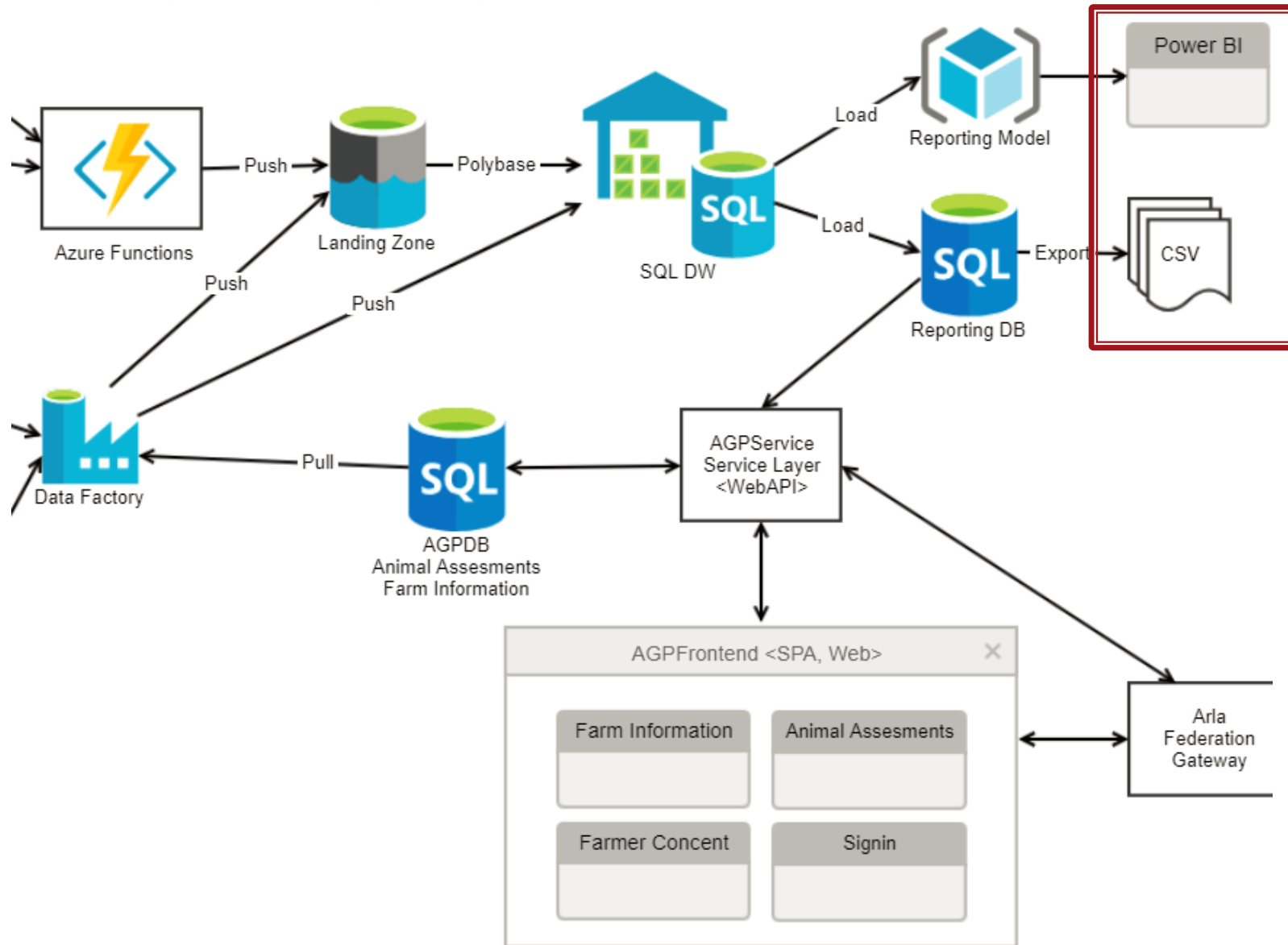
▸ Relational database-as-a service
▸ Scale to your needs

Serve: Azure Analysis Services

▸ Analysis Services Tabular
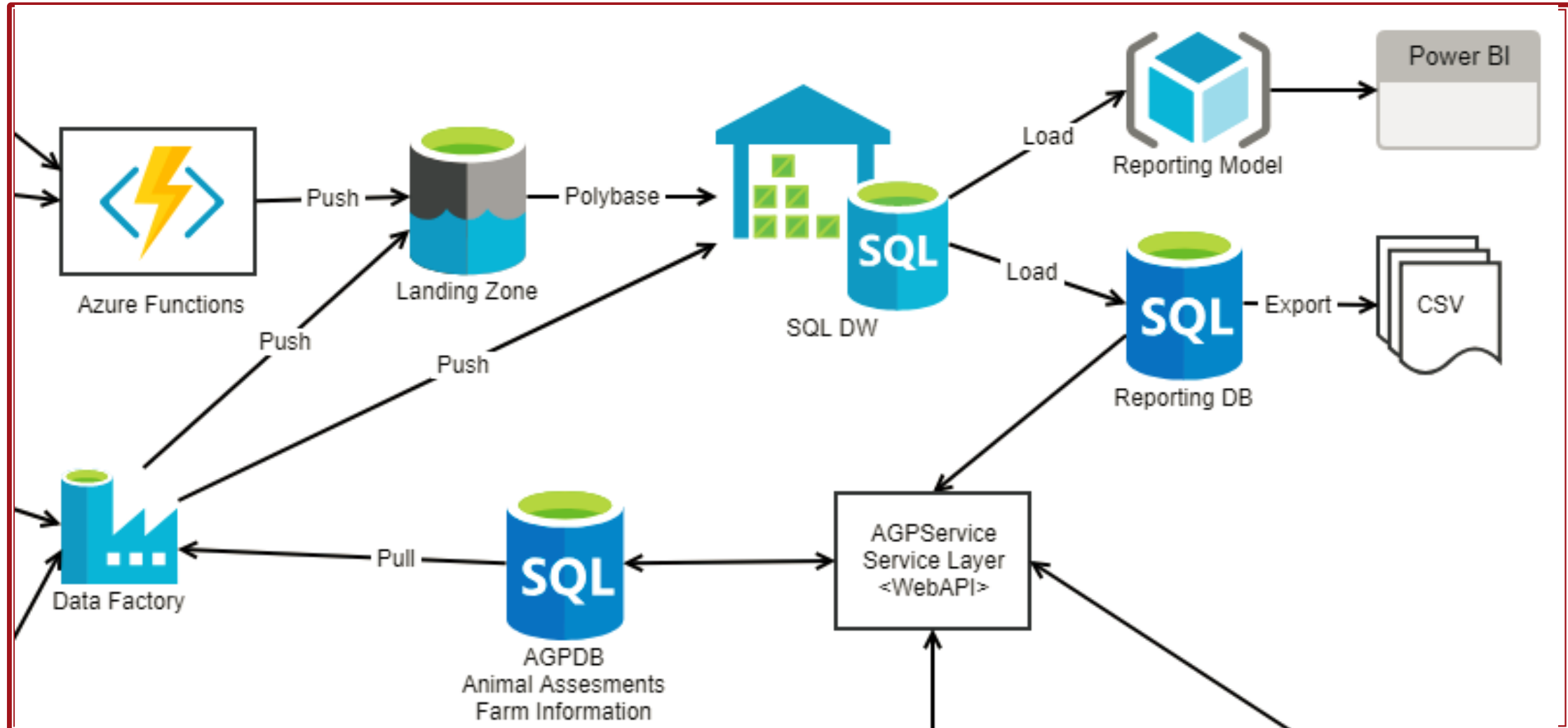
▸ Easy scale up and out

▸ Power BI on top

Presentation

Presentation: Power BI Embedded

▸ Stunning visuals, reports and dashboards directly into the application
▸ Easy implementation
▸ Security handled with RLS in the Data Model

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Orchestration
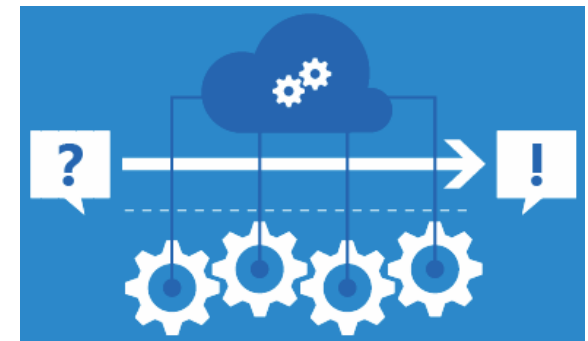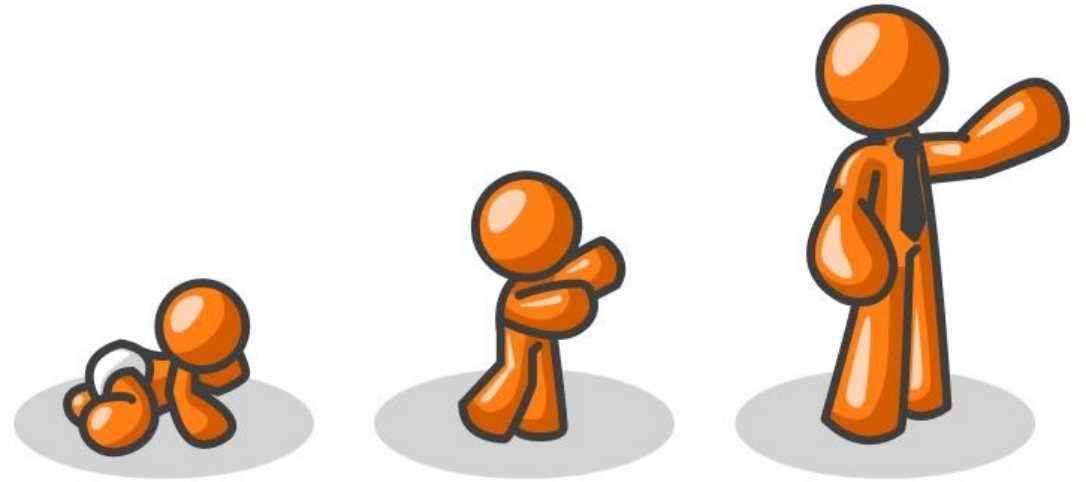
Orchestration: Azure Automation Runbooks

▸ Process Automation

▸ PowerShell scripts

▸ Integration with other Azure services

- Start Azure Data Factory pipelines
- Turn Azure SQL DWH on and off
- Execute stored procedures in DWH
- Process Azure Analysis Services
- Refresh Power BI dataset

▸ Alternatives:

- Azure Data Factory
- Azure Logic Apps

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Wrapping up

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Lessons learned

▸ Plus
- Start service – fast going
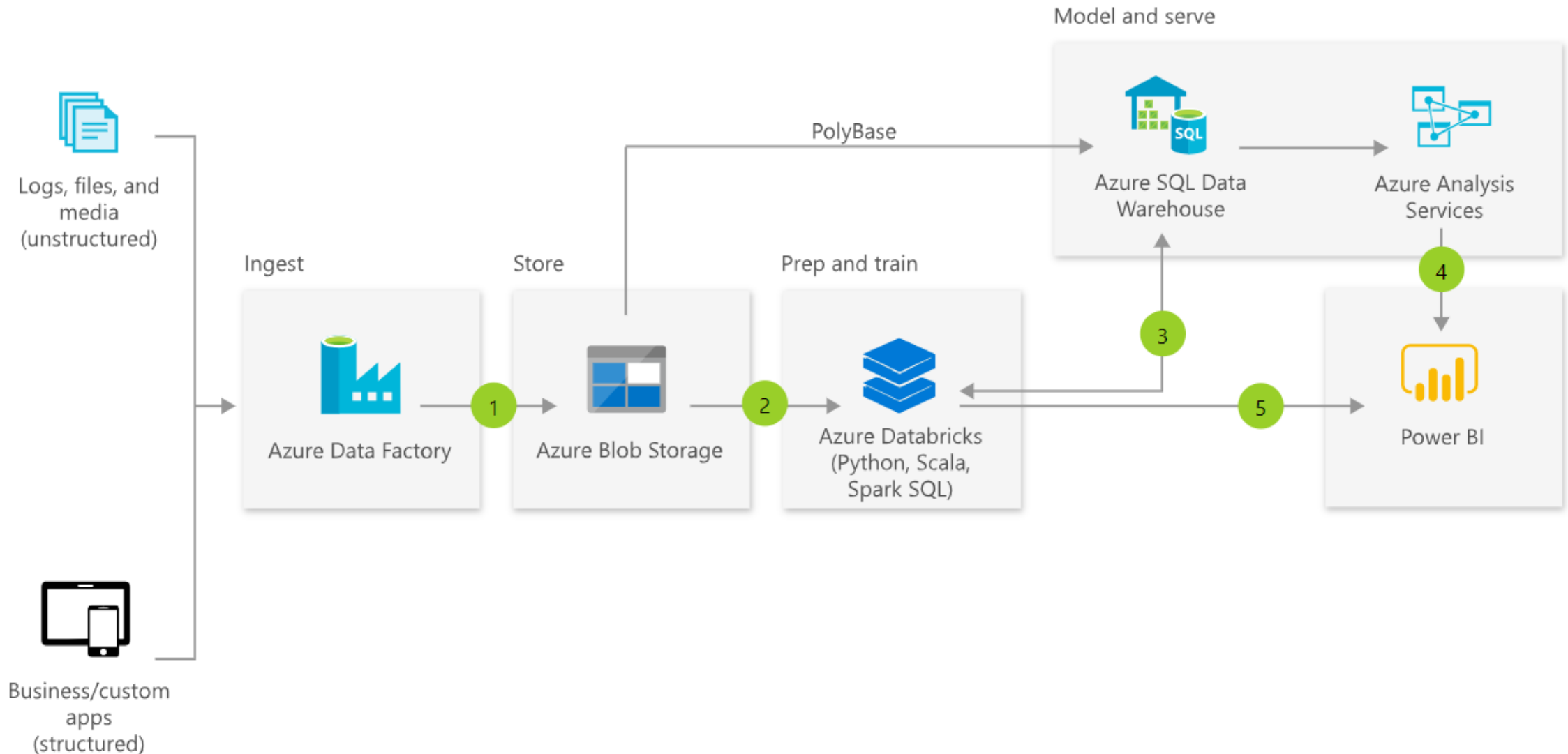- Easy to test different services
- Many options for mixing services
- Cost: Scale and pause services

▸ Challenges
- Overview of possibilities and limitations
- Missing Visual Studio templates to Azure SQL DW and Data Factory
- Limited SQL syntax support in Azure SQL DW
- Azure Data Lake Store and GDPR
- No support for translations in Power BI

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Modern Data Warehouse Architecture

Questions and/or more time for beer?

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Ressources

▶ Arlagården Plus:
https://www.arla.com/company/responsibility/farm-quality/arlagaarden/

▶ Modern Data Warehouse:
https://azure.microsoft.com/en-us/solutions/architecture/modern-data-warehouse/

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Prize Raffle and goodbye Beer

▸ Remember to give feedback
  - Conference feedback – https://forms.gle/8e96WvDuTvLAP9SA6
  - Saturday feedback – https://forms.gle/rddzwGffw3qa8JZu5

▸ We hope you had a great Saturday !

  ▸ Data South West

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