

# Benni De Jagere

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No coffee? No Insights!



## Power BI Dataflows? Why you need to implement it!

Not so long ago, Power BI Dataflows have been added to the Power BI landscape. It is showing great promise, as they have the potential of becoming key in every (large) implementation of a Power BI or Hybrid BI Architecture.

During this session, the core concepts of Power BI Dataflows will be explained, and we'll discuss how Power BI Dataflows could alleviate some of the specific problems you might be experiencing in your current architecture.

How this feature ties into some other cool concepts, like Azure Data Lake Storage Gen2 or the Common Data Model, obviously can't be missing from this speech.

Expect to walk out of this session with a decent grasp on the underlying architecture, and some key takeaways to take home with you.






Power BI Dataflows? Why you need to use it?

Benni De Jagere

# Benni De Jagere?

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- Senior Data Insights Consultant
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- #SayNoToPieCharts



# Dataflows?

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- ~~(Google) Cloud Dataflow~~
- ~~TensorFlow Dataflow~~
- ~~SSIS Data Flows~~
- ~~Microsoft Flow~~
- ~~ADFv2~~
  - ~~Mapping Data Flows~~
  - ~~Wrangling Data Flows~~
- ~~PowerApps Dataflows~~

Power BI Dataflows!

01

Who?

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# Who should be using Dataflows

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- (Financial) Power Users
- Business Analysts
- Tech savvy Users
- Everyone else 😊

# What?

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# 02

# Only Entity, Many Datasets

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- Lack of semantic model will create many versions
- Re-use of queries across datasets is limited
- Shared Datasets is all or nothing approach



# Only Entity, Many Datasets

Date Dimension  
used in  
Sales.pbix file



Date Dimension  
used in  
Inventory.pbix file



Date Dimension transformation executed multiple times,  
when only once is needed

# Only Entity, Many Datasets



Date Dimension transformation executed only once, and then used multiple times

03

How?

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# Enter, Power BI Dataflows!

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- Preview Late 2018, GA April 2019
- Cloud based PowerQuery experience
- Self-Service Data Preparation
- Non-technical user personas

# Enter, Power BI Dataflows

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- Build reusable Data Entities
- **Not a replacement for a DWH Solution**
- Manageable and securable like all Power BI Objects
- Managed CDM Folders

# Demo: Dataflows

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# 04

# New York Citibikes

- [www.citibikenyc.com/system-data](http://www.citibikenyc.com/system-data)
- Public Open Data
- Starts June 2013
- Information about every trip
  - Longer than 60 seconds
  - Starts at public station
- Masterdata



<https://i0.wp.com/thenypost.files.wordpress.com/2013/12/citibike1.jpg?quality=90&strip=all&ssl=1>

05

How?

Common Data  
Model

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# Common Data Model

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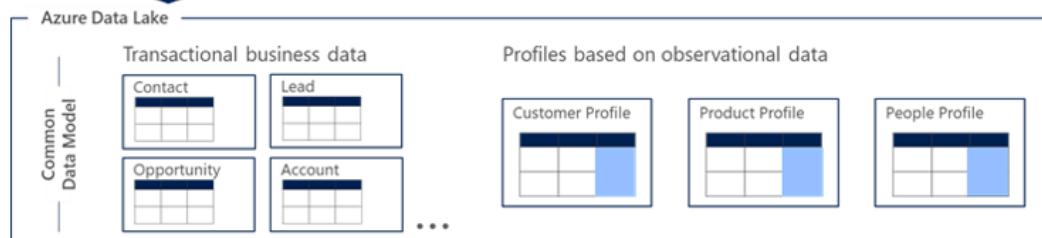
- Unified metadata layer for Cloud Apps and Services
- Shared
  - Data Language
  - Storage Format and Location
  - Set of Default Entities
- Extend Entities for all consumers
- Simplified integration and disambiguation of data

Decision Makers, Business analysts

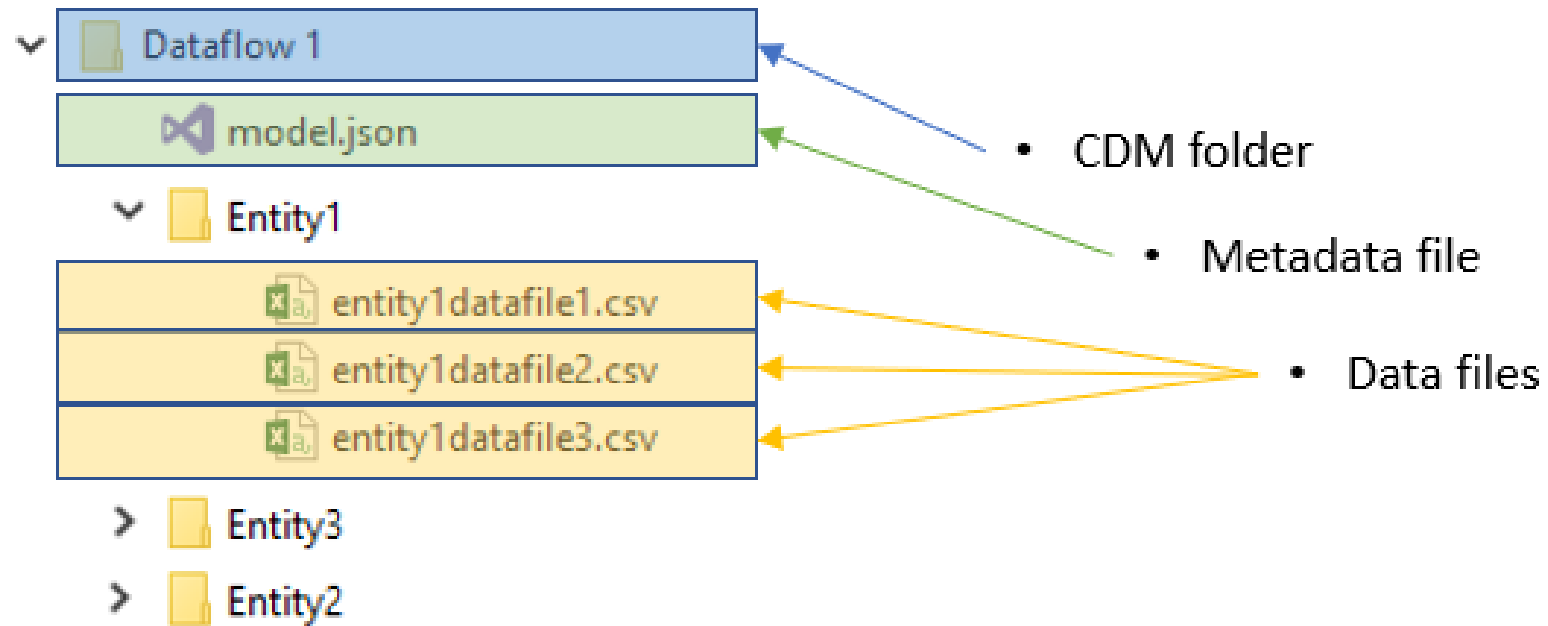
No code, low code

Data scientists, Data engineers

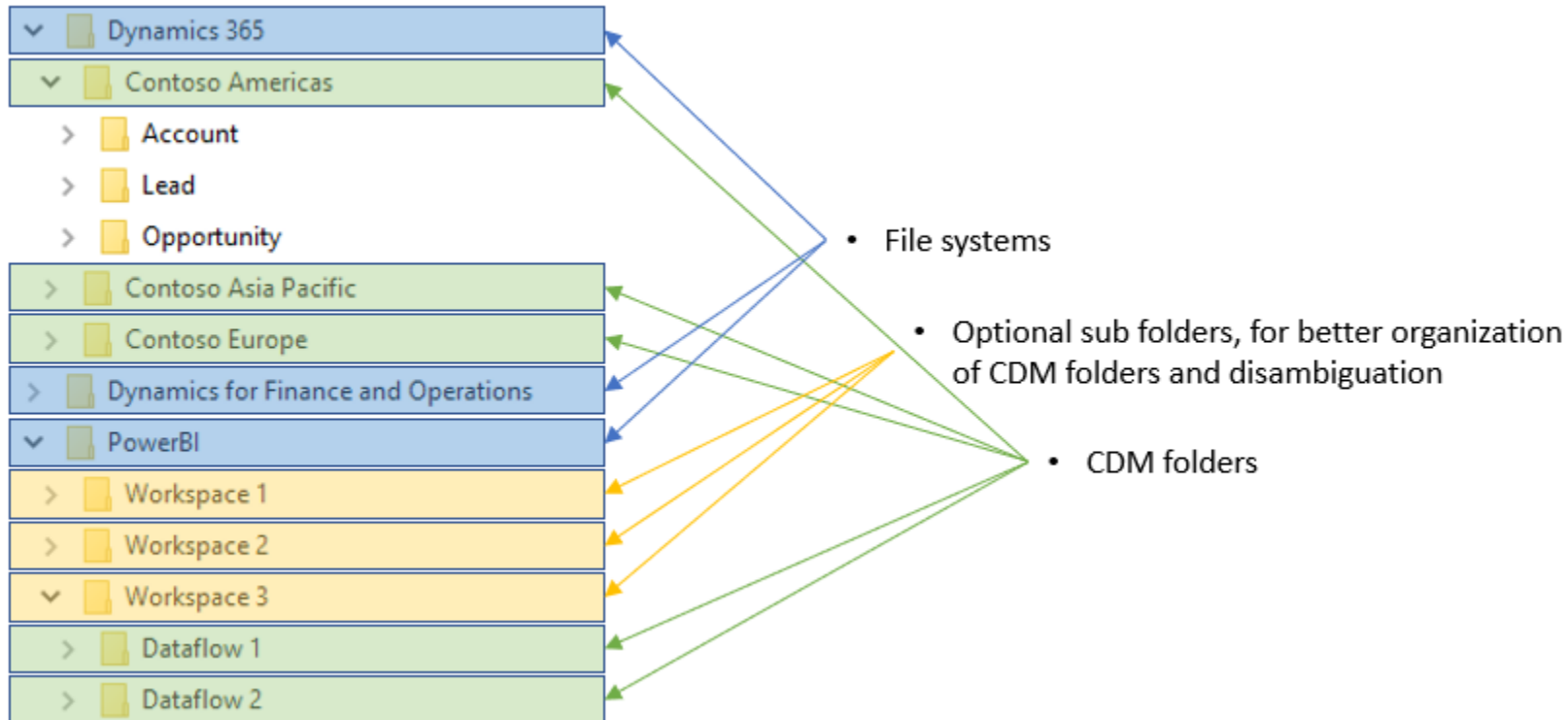
Low to high code



# Common Data Model



# Common Data Model



# How?

## Data Refresh

# Data Refresh

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- Trigger Manual refresh in the UI
- Scheduled refresh comparable to Power BI Datasets
- Refresh History offers an interesting view
- Automatically refreshes any dataflows it is dependent on
- Incremental Refresh is Premium Only (for now?)

Demo:

Scheduled Refresh

# Query Reusage

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# Query Reusability

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- No developer experience in Power BI Desktop
  - Copy/Paste queries between environments
- Linked/Computed Entities (Premium Only)
  - In-lake Compute, which requires dedicated capacity
  - Can Reference any Entity in any Workspace
  - Data is only stored in the original Entity
- Reference Query, Append or Merge
  - Create a query, and mark 'Disable for load'
  - Reference this query, in the same workspace
  - Logic is reused, and data is duplicated every time the query is referenced

Demo:

Query Reusage

# Gateway & Security

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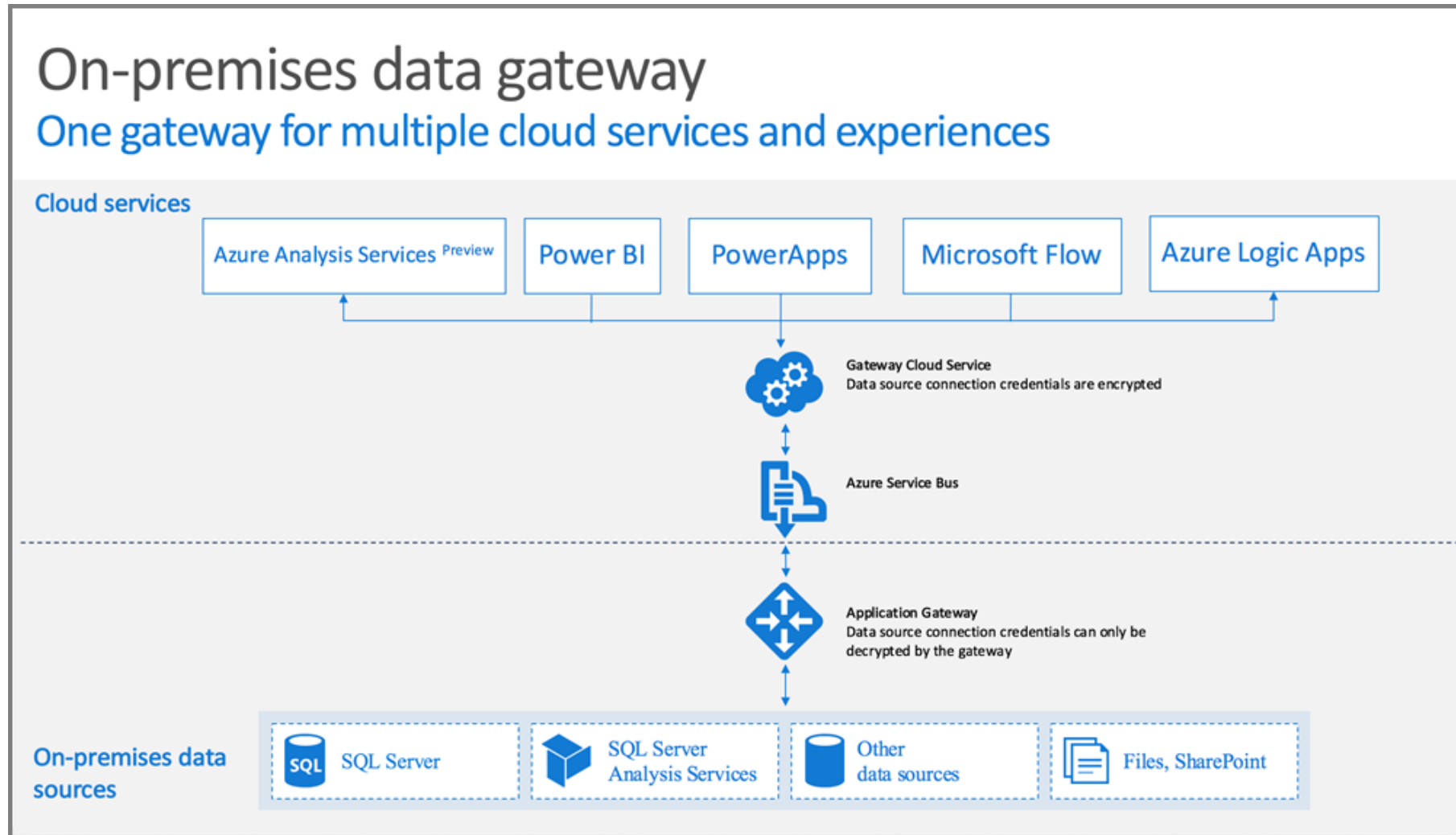


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# 10

# On-Premises Datasources



# Securing Dataflows

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- Dataflows reside in Workspaces
- Secure/Hide Linked Entities by disabling load
- Datasets using Dataflows will always be Import Mode
  - Security is the responsibility of the dataset designer!

## Demo: Gateway & Security

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# The Big Picture

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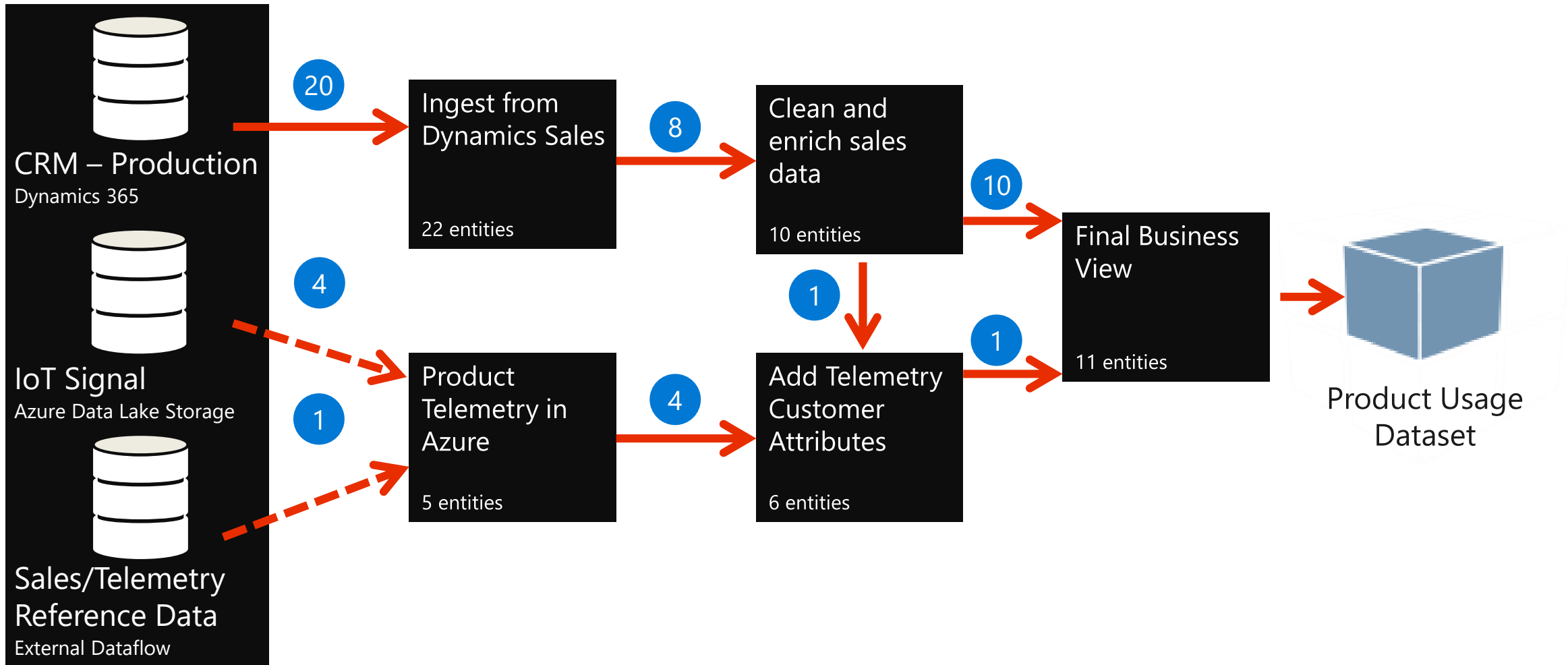


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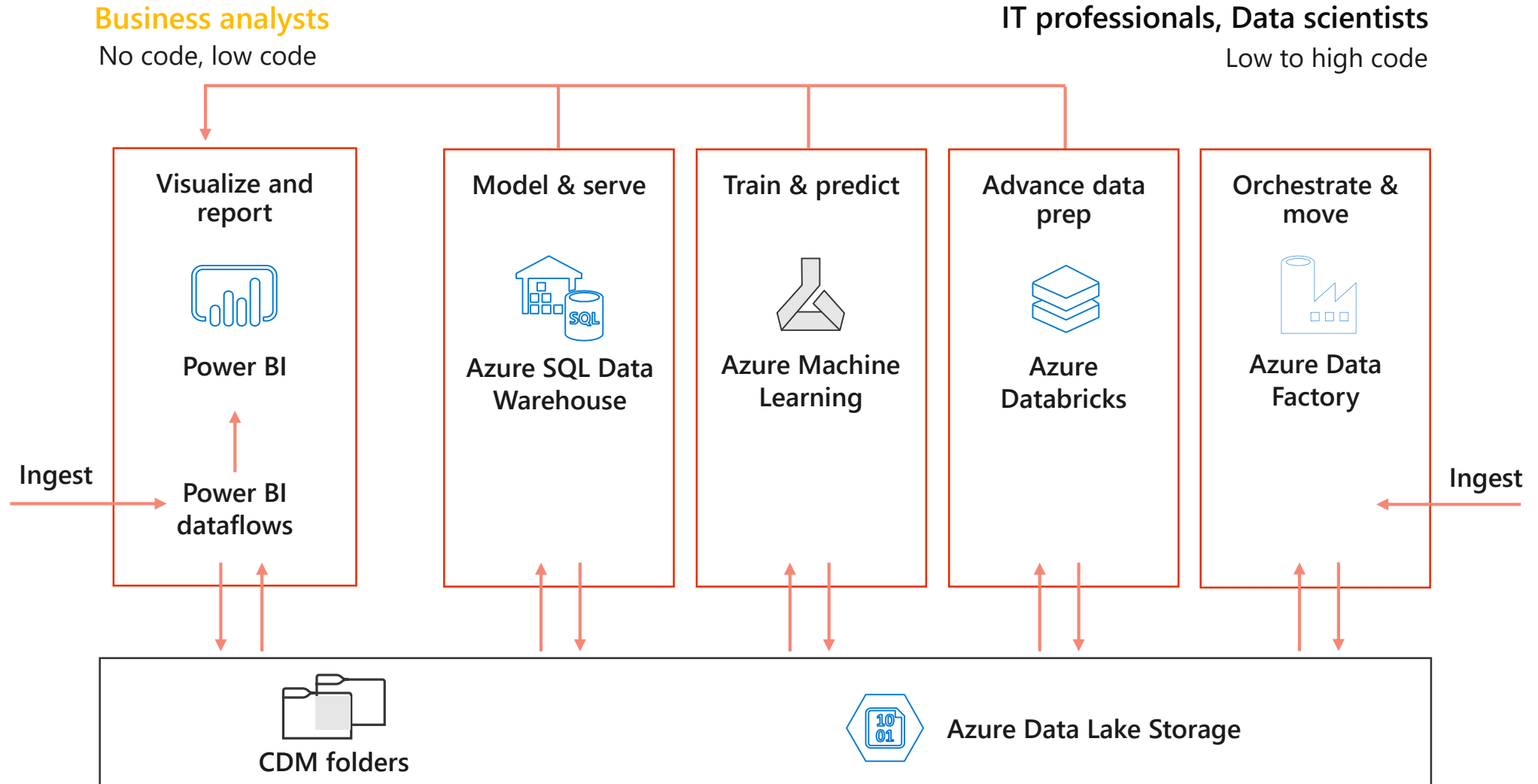
12

# The Bigger Picture

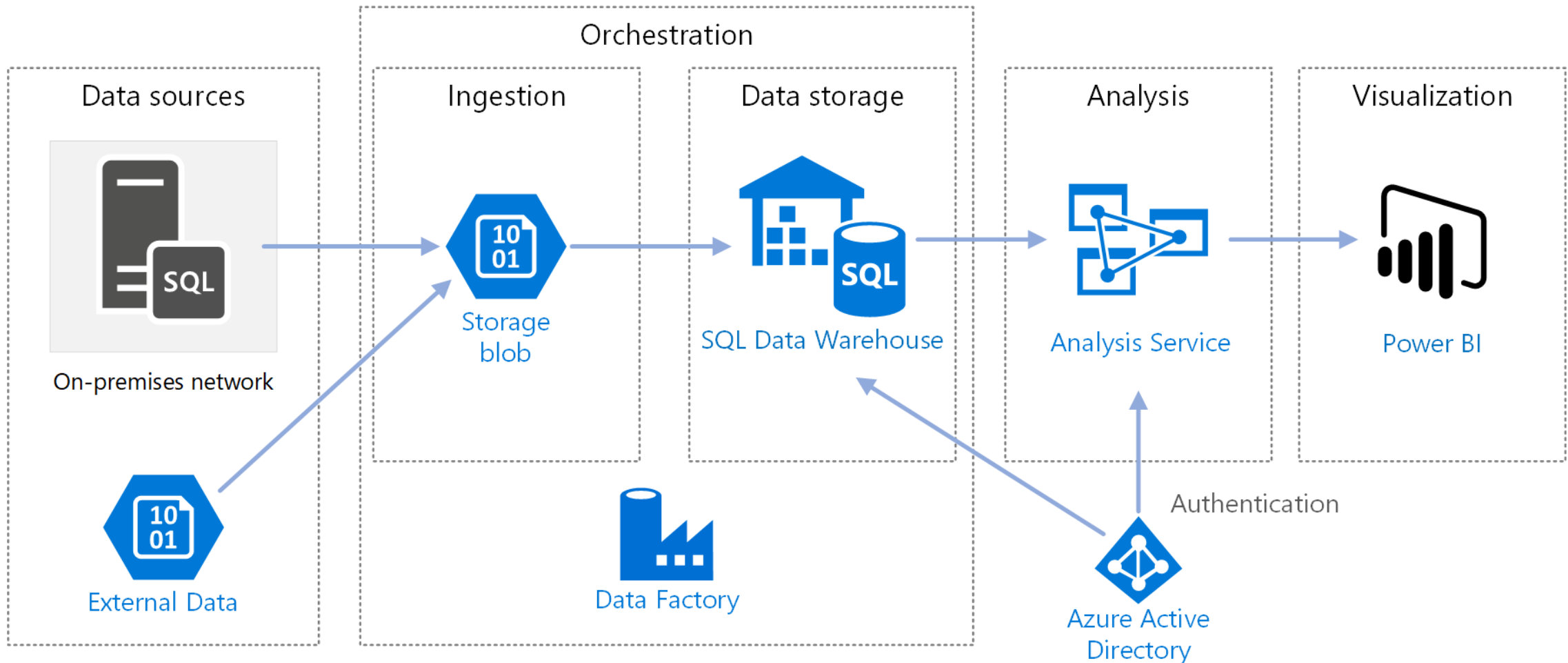




# The Bigger Picture



# The Bigger Picture



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Why?



# Where do Dataflows fit in?



- Without dataflows, users might
  - Be blocked on IT involvement
  - Use Excel and manual processes
  - Require 3<sup>rd</sup> party data preparation tools
- Dataflows are for Power Query users
  - Easy to build reusable data entities
  - Easier to compose and orchestrate
  - Multi-stage, multi-user data prep workflows
  - Dataflows fill a self-service gap in the end-to-end story

# Extending Dataflows

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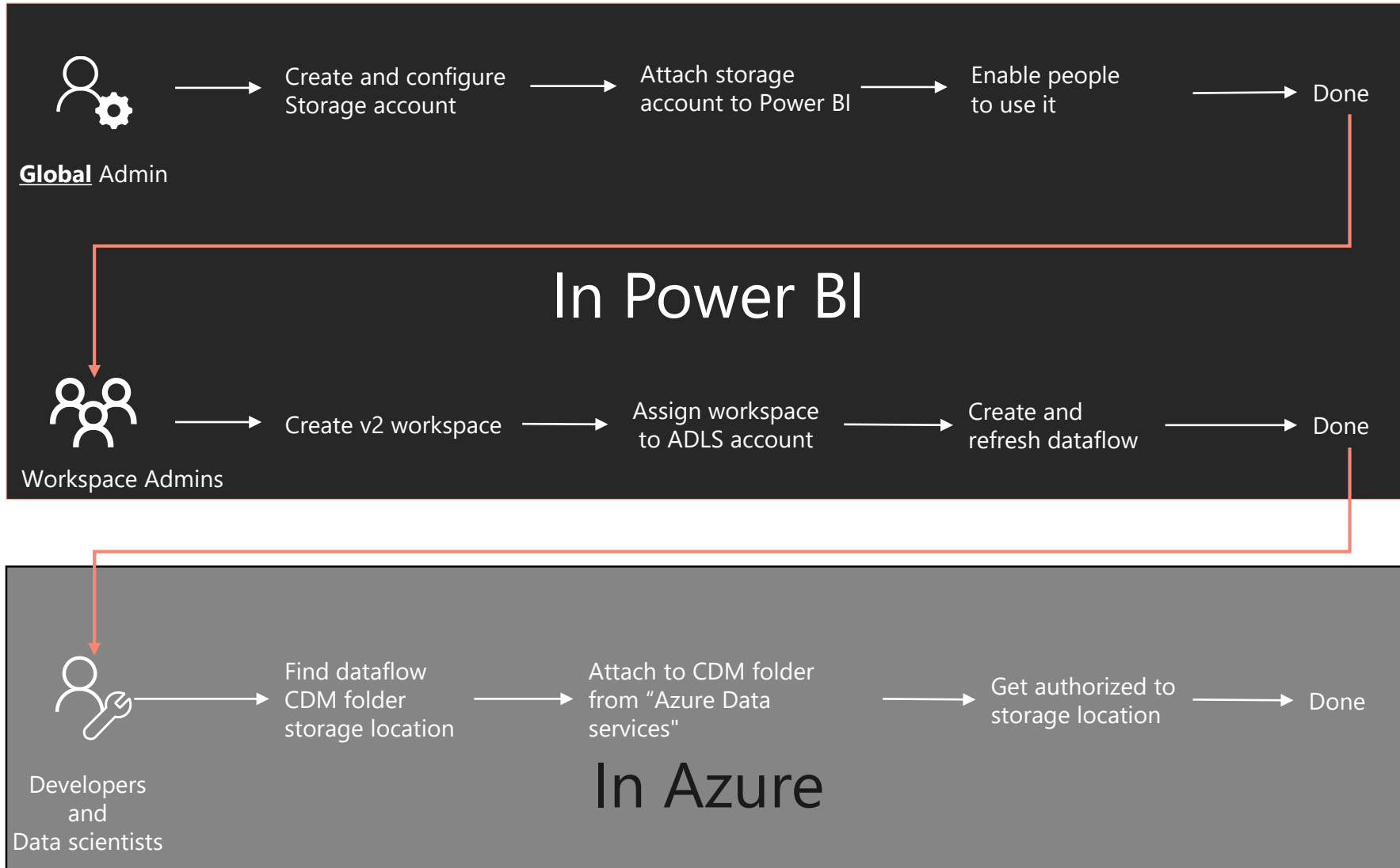
# Bring your own Storage Account

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- Use your organizational ADLSg2 resource and attach it to Power BI
- A Global Admin and an Azure subscription is required
- Once a dataflow storage location is configured, it cannot be changed
- By default, only owners of a dataflow stored in Azure Data Lake Storage Gen2 can access its data
- To authorize additional users to the dataflows stored in Azure, you must add them to the dataflow's CDM folder
- Creating dataflows with linked entities is only possible when they are stored in the same storage account



# Bring your own Storage Account



## What "done" means:

Workspace Admins can now configure workspace to store its dataflows in ADLS account Global Admin configured

Dataflow CDM folder is stored in ADLS and is accessible by its creator ONLY.

Other people in workspace can get data if they are authorized to the CDM folder outside of Power BI

Now data can be read from CDM Folder via Azure Data Services or LOB solutions that are CDM folder aware

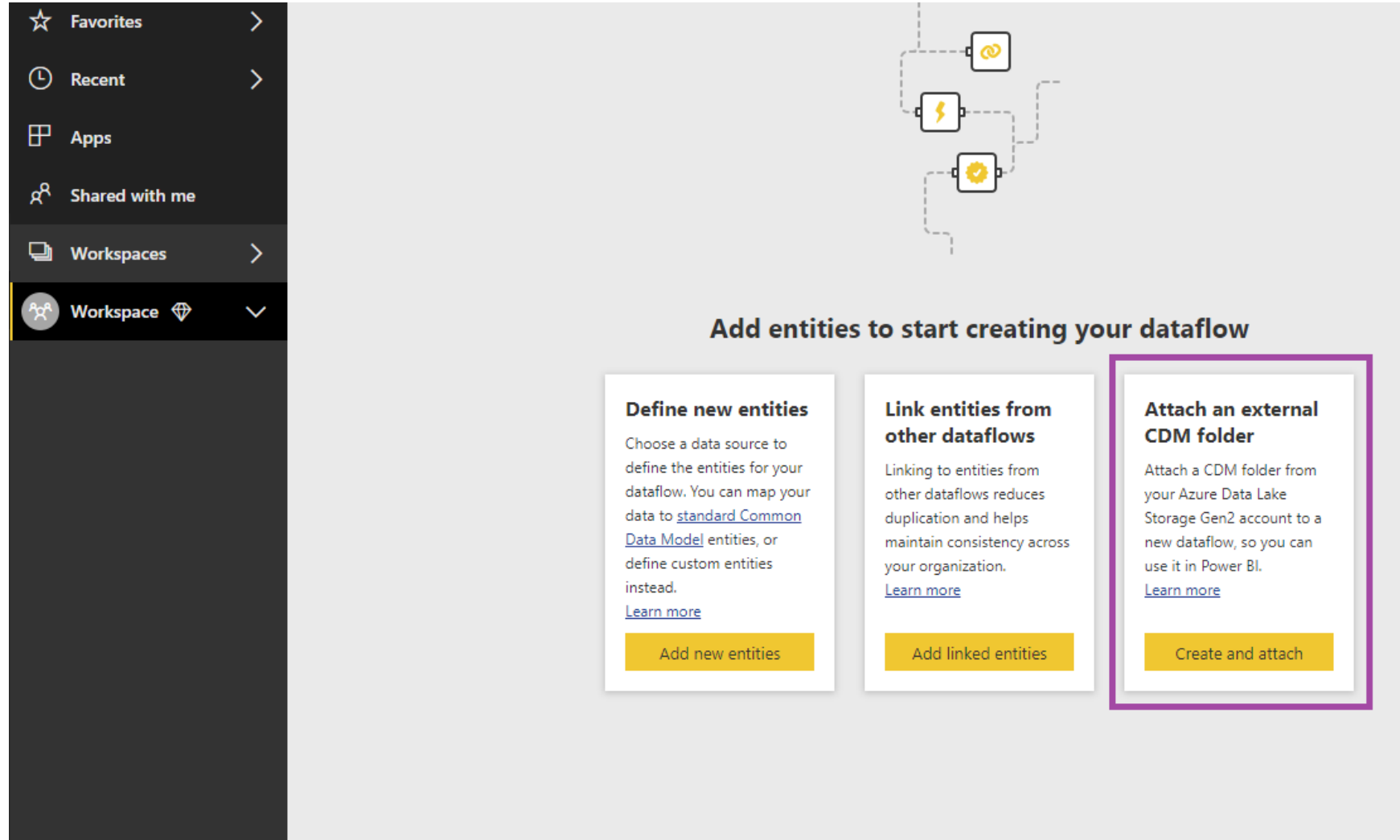
# External CDM Folders

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- CDM Folders is an open standard
- Any tool that can access ADLSg2, and output JSON
- Link External CDM Folder in Power BI
- Done!



# External CDM Folders



The screenshot displays the Microsoft Fabric user interface. On the left is a dark sidebar with navigation options: Favorites, Recent, Apps, Shared with me, Workspaces, and the selected Workspace. The main area has a light gray background with a dataflow diagram at the top. Below the diagram, the heading 'Add entities to start creating your dataflow' is centered. Three white cards are presented below the heading:

- Define new entities**  
Choose a data source to define the entities for your dataflow. You can map your data to [standard Common Data Model](#) entities, or define custom entities instead.  
[Learn more](#)  
[Add new entities](#)
- Link entities from other dataflows**  
Linking to entities from other dataflows reduces duplication and helps maintain consistency across your organization.  
[Learn more](#)  
[Add linked entities](#)
- Attach an external CDM folder** (highlighted with a purple border)  
Attach a CDM folder from your Azure Data Lake Storage Gen2 account to a new dataflow, so you can use it in Power BI.  
[Learn more](#)  
[Create and attach](#)

# External CDM Folders

**Attach an external CDM folder to a new dataflow**

Name \*  
Sales Forecasting

Description  
Dataflow entities with output from Azure Machine Learning models for detailed sales forecasts.

CDM folder path \*  
Enter the path to your CDM folder in Azure Data Lake Storage Gen2

Create and attach Cancel

Define  
Choose a CDM folder to attach to the dataflow. You can define the dataflow entities to be created in the dataflow, or you can define the CDM folder path instead. [Learn more](#)

External  
Choose a CDM folder to attach to the dataflow. You can define the dataflow entities to be created in the dataflow, or you can define the CDM folder path instead. [Learn more](#)

Add new entities Add linked entities Create and attach

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**BONUS!**

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# Power BI dataflows sort-of-FAQ

- ✓ • A capability for self-service data preparation in Power BI
- ✓ • Delivered in a familiar Power Query experience
- ✓ • Built on the foundation of Azure Data Lake Storage gen2
- ✓ • Utilize the CDM folder format for data storage
- ✓ • A tool for business users to drive data reuse without requiring IT involvement
- ✓ • Enable Excel-like data lineage and orchestration

- ✗ • NOT a replacement for datasets
- ✗ • NOT a replacement for a data warehouse
- ✗ • NOT a replacement for Azure Data Factory or SSIS
- ✗ • NOT a Premium-only feature
- ✗ • NOT an additional cost or fee
- ✗ • NOT spelled with a space or any capital letters

# The Self-Service BI Hoax

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- “Products and technology don’t enable Self-Service BI, people and methodologies do”
  - [Nimrod Avissar on LinkedIn Pulse](#)

# Recap

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# Why you should use it!

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- Business Driven Initiatives
- Fill existing gaps
- Quick prototyping
- Strive for IT handover to operationalize later on
- Configure your own ADLSg2 Storage

# Resources

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- <https://docs.microsoft.com/en-us/power-bi/service-dataflows-best-practices>
- <https://powerbi.microsoft.com/en-us/blog/power-bi-dataflows-and-azure-data-lake-storage-gen2-integration-preview/>
- <https://docs.microsoft.com/en-us/power-bi/service-dataflows-overview>
- <https://docs.microsoft.com/en-us/azure/architecture/reference-architectures/data/enterprise-bi-adf>
- <https://docs.microsoft.com/en-us/common-data-model/>



# Resources

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- <https://ssbipolar.com/2018/10/23/dataflows-in-power-bi/>
- <https://www.sqlchick.com/entries/2019/3/28/three-ways-to-use-power-bi-dataflows>
- <https://prologika.com/dataflows-the-good-the-bad-the-ugly/>
- <https://exceleratorbi.com.au/power-bi-dataflows-and-why-you-should-care/>
- <https://www.jamesserra.com/archive/2018/08/power-bi-dataflows/>
- <https://ssbipolar.com/2019/10/14/power-bi-dataflows-vs-datasets/>
- <https://radacad.com/what-are-the-use-cases-of-dataflow-for-you-in-power-bi>




# Resources

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- [Dataflows Whitepaper – Amir Netz](#)
- [Release Notes & Roadmap](#)
- [CDM Tutorial](#)
- [CDM Documentation](#)
- [Dataflows and CDM Sessions at MBAS](#)

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