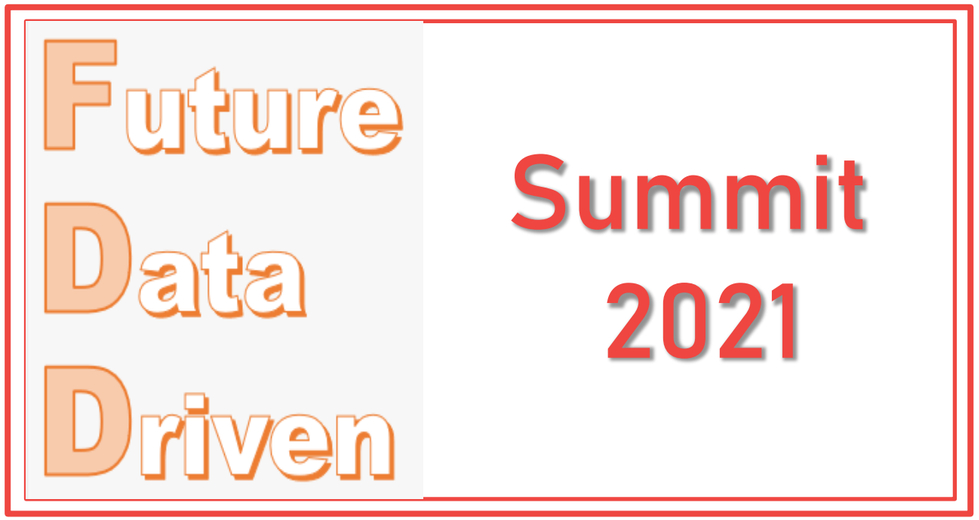
Power BI dataflows?
Why you need to implement it!

Benni De Jagere



Power BI dataflows?
Why you need to implement it!

Benni De Jagere
Enterprise Data Architect, Data Platform MVP
Inetum-Realdolmen

About me

dataMinds.be Co-Leader

@BenniDeJagere

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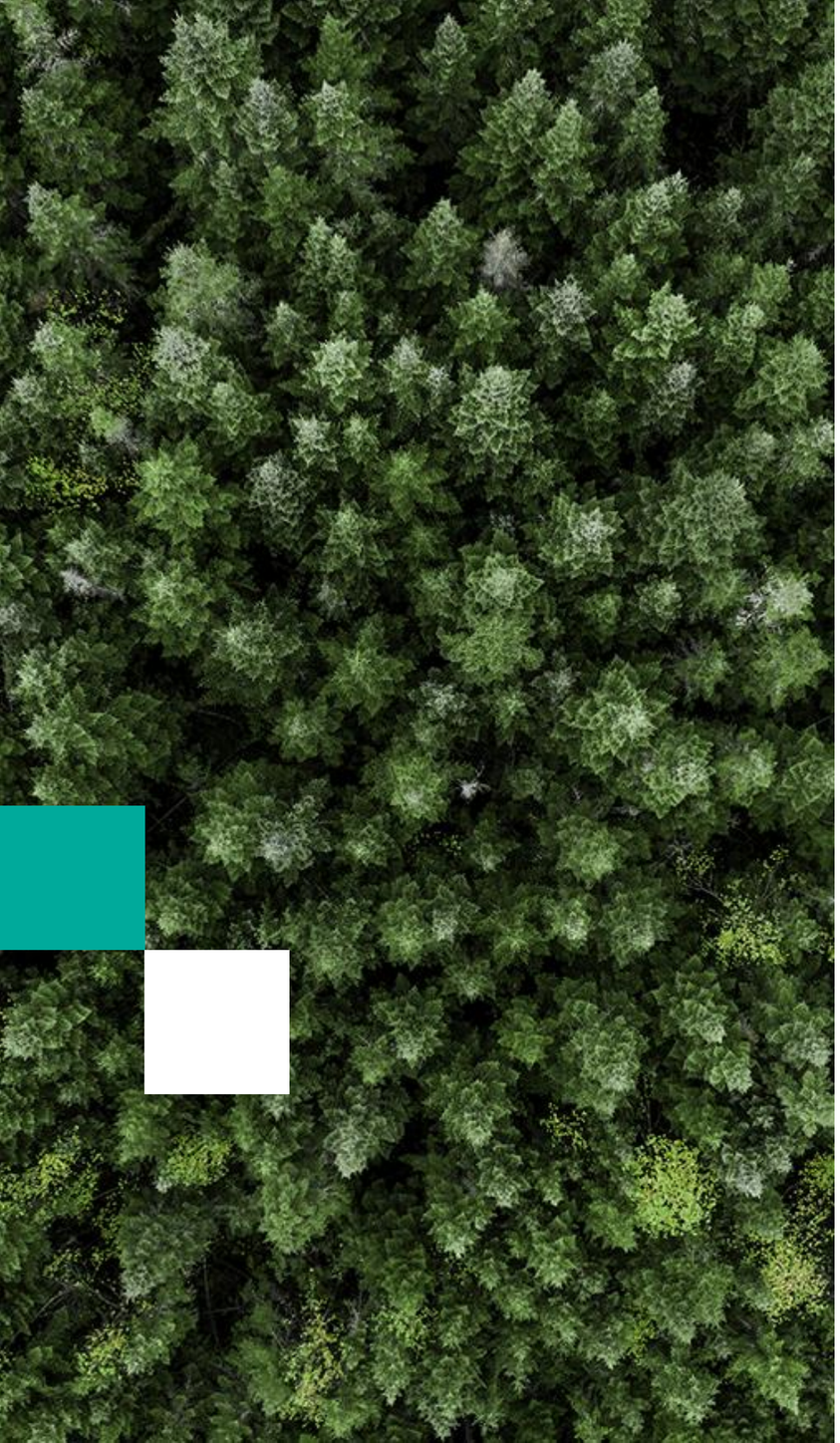
sessionize /bennidejagere

Microsoft® Most Valuable Professional

Data Platform

#SayNoToPieCharts



dataflows?

dataflows?

(Google) Cloud Dataflow

TensorFlow Dataflow

SSIS Data Flows

Microsoft Flow

ADFv2

- Mapping Data Flows
- Wrangling Data Flows

PowerApps dataflows

Power Platform dataflows

dataflows?

~~(Google) Cloud Dataflow~~

~~TensorFlow Dataflow~~

~~SSIS Data Flows~~

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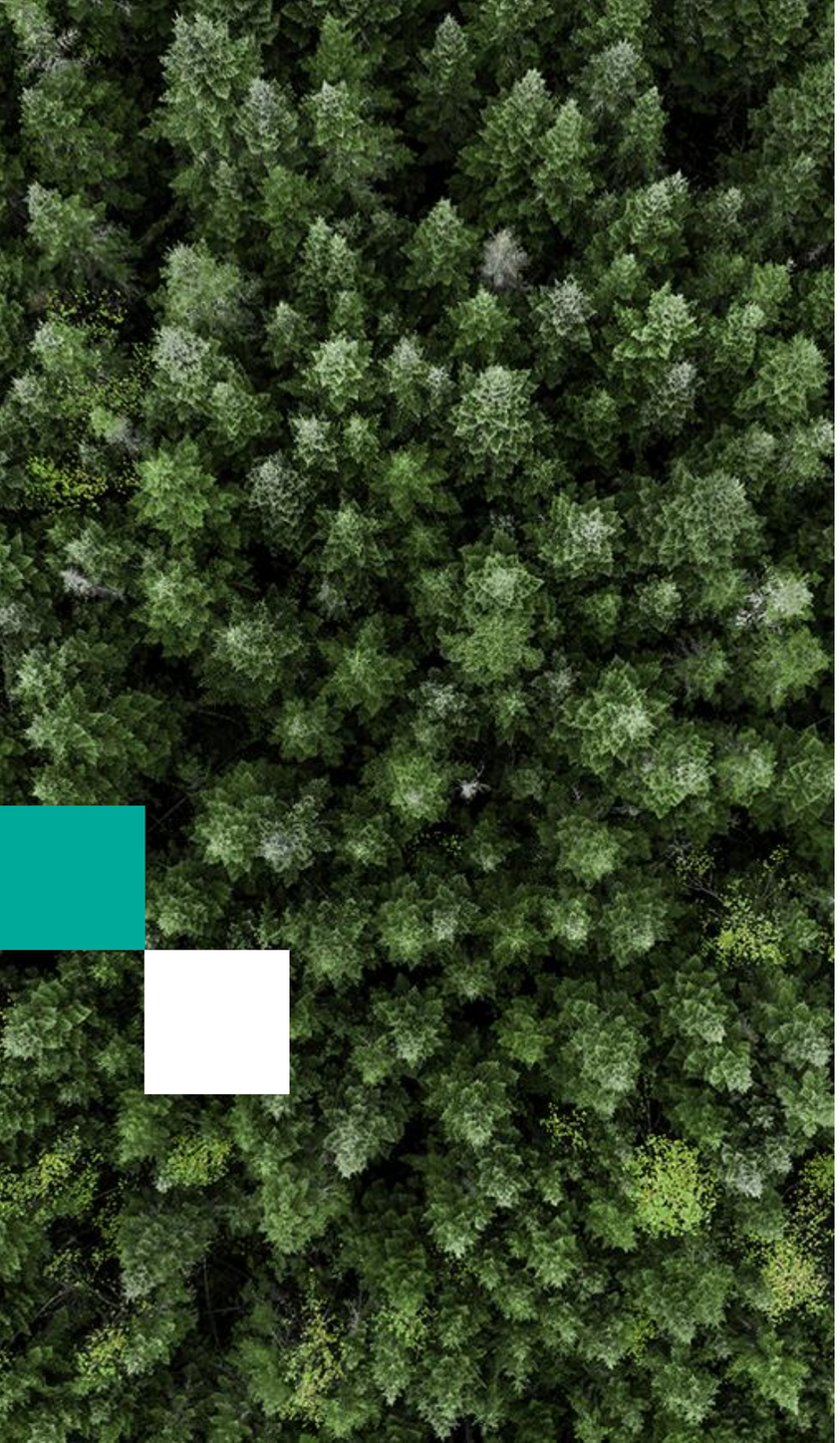
~~PowerApps dataflows~~

~~Power Platform dataflows~~

Power BI dataflows!



Who?

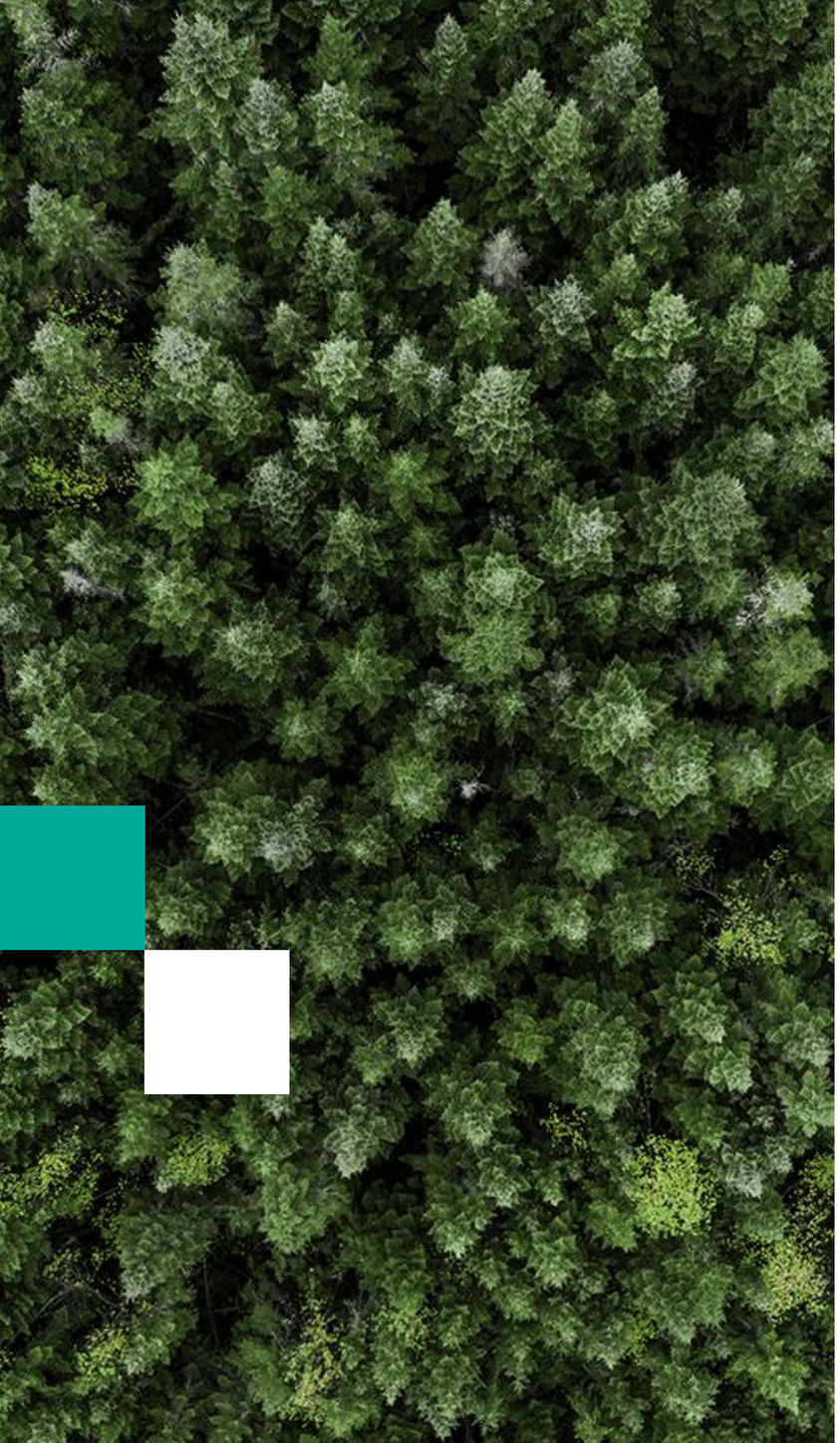
Who should be using dataflows?

(Financial) Power Users

Business Analysts

Tech savvy Users

Everyone else ☺



What?

One Entity, Many Datasets

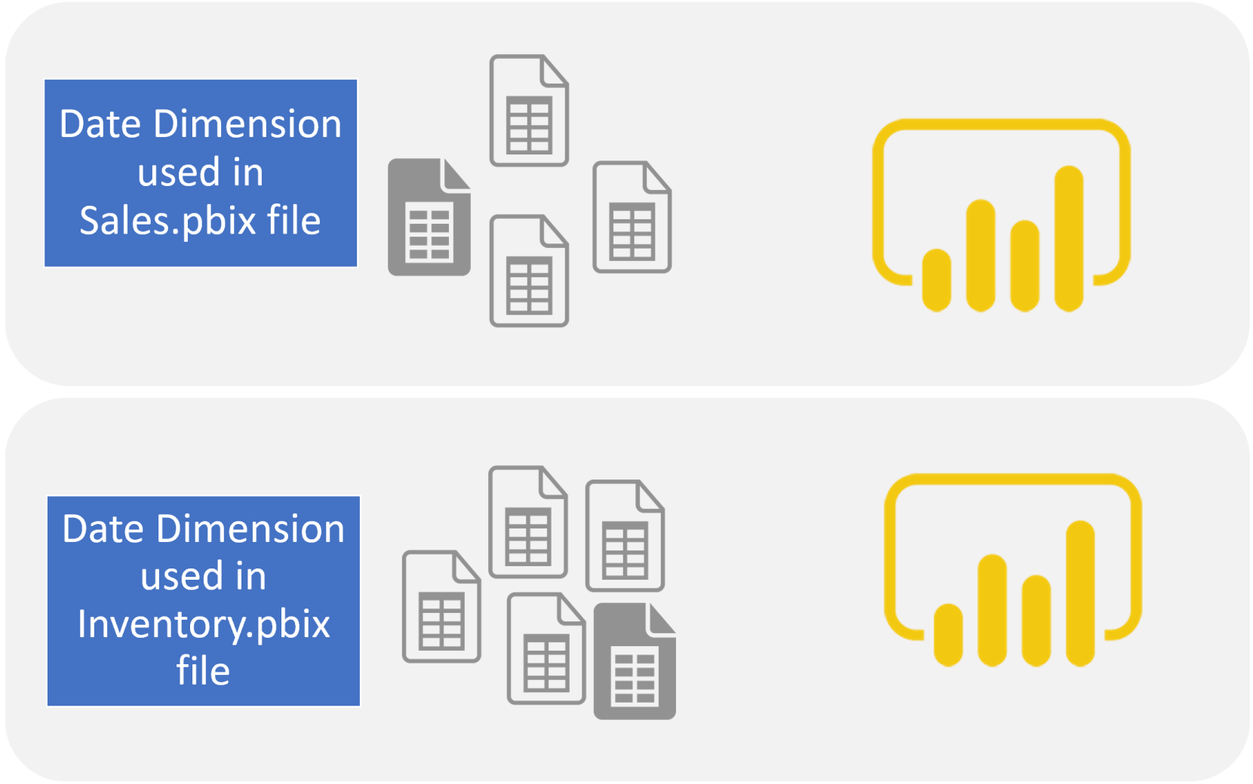
Lack of semantic model will create many versions

Re-use of queries across datasets is limited

Shared Datasets is an all or nothing approach

Will “Direct Query over Power BI datasets and Azure Analysis Services” change the way we work?

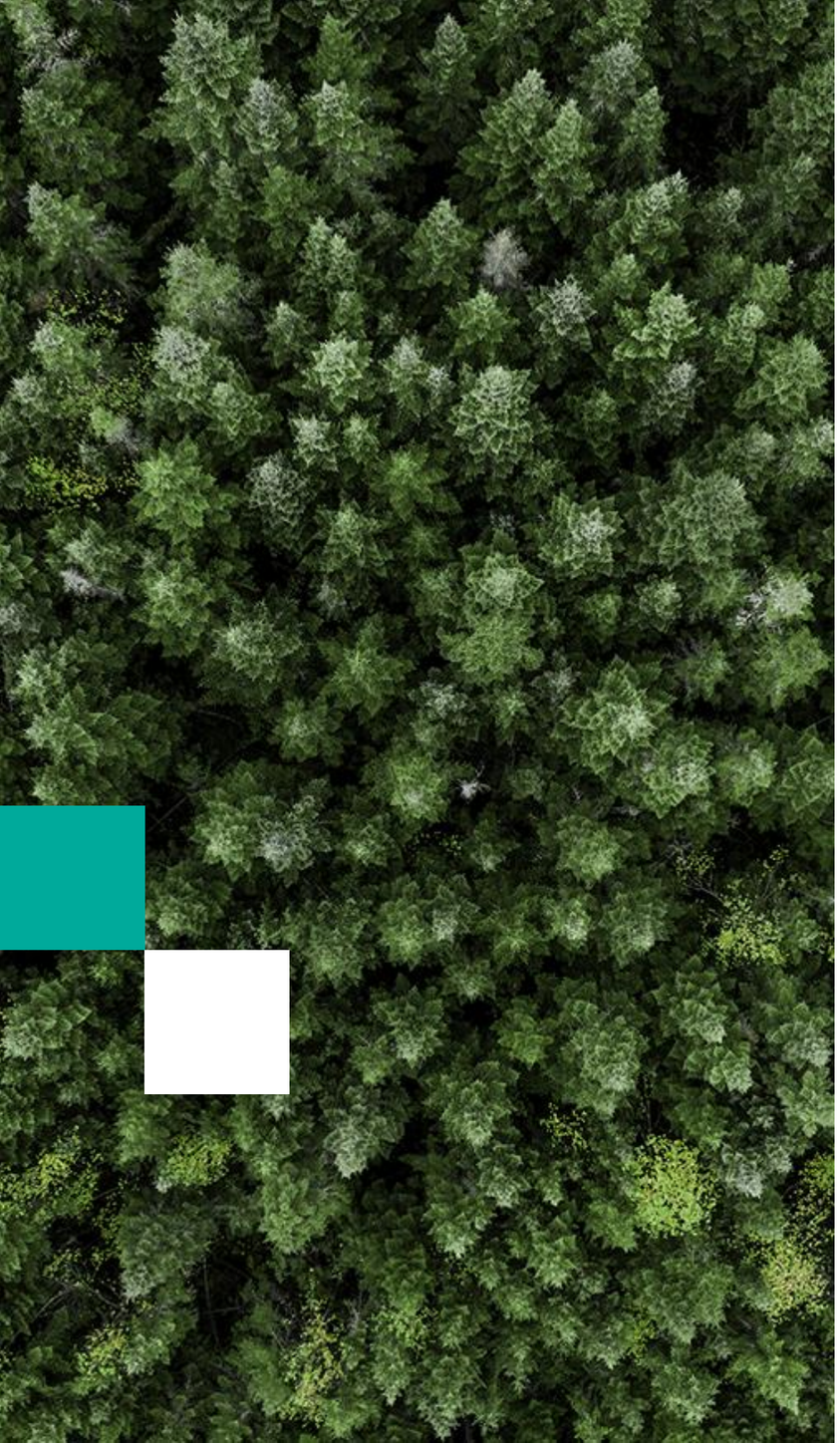
One Entity, Many Datasets



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

One Entity, Many Datasets

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



How?

Enter, Power BI dataflows!

Preview Late 2018, GA April 2019

Cloud based PowerQuery experience

Self-Service Data Preparation

Non-technical user personas

Enter, Power BI dataflows!

Build reusable Data Entities

Not a replacement for a DWH Solution (my 2 cents)

Manageable and securable like most Power BI artefacts

Managed CDM Folders

Power BI dataflows

Demo

Demo: Use Case

www.citibikenyc.com/system-data

Public Open Data

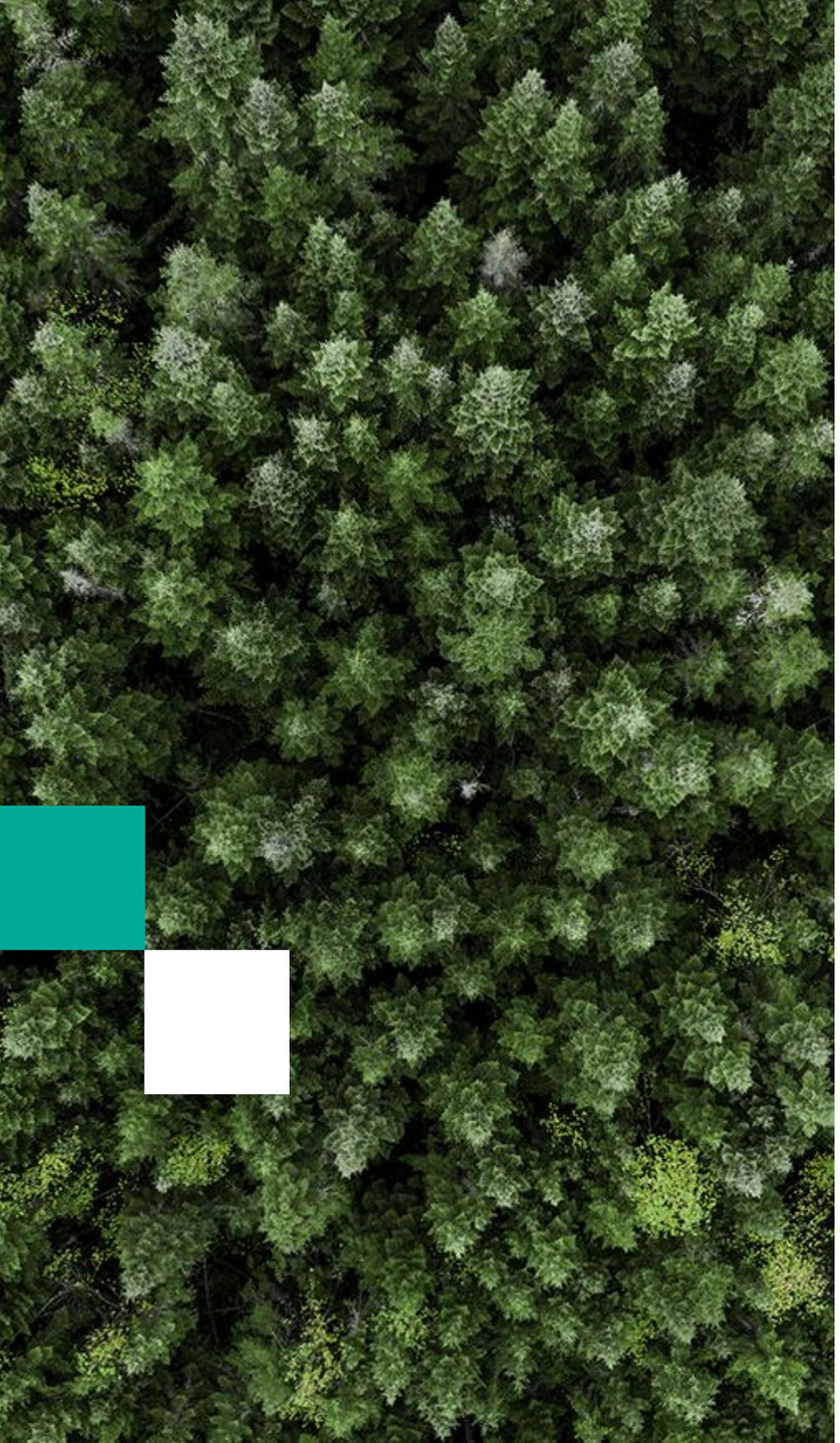
Starts June 2013

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



How?

Common Data Model

Common Data Model

Unified metadata layer for Cloud Apps and Services

Shared

- Data Language
- Storage Format and Location
- Set of Default Entities

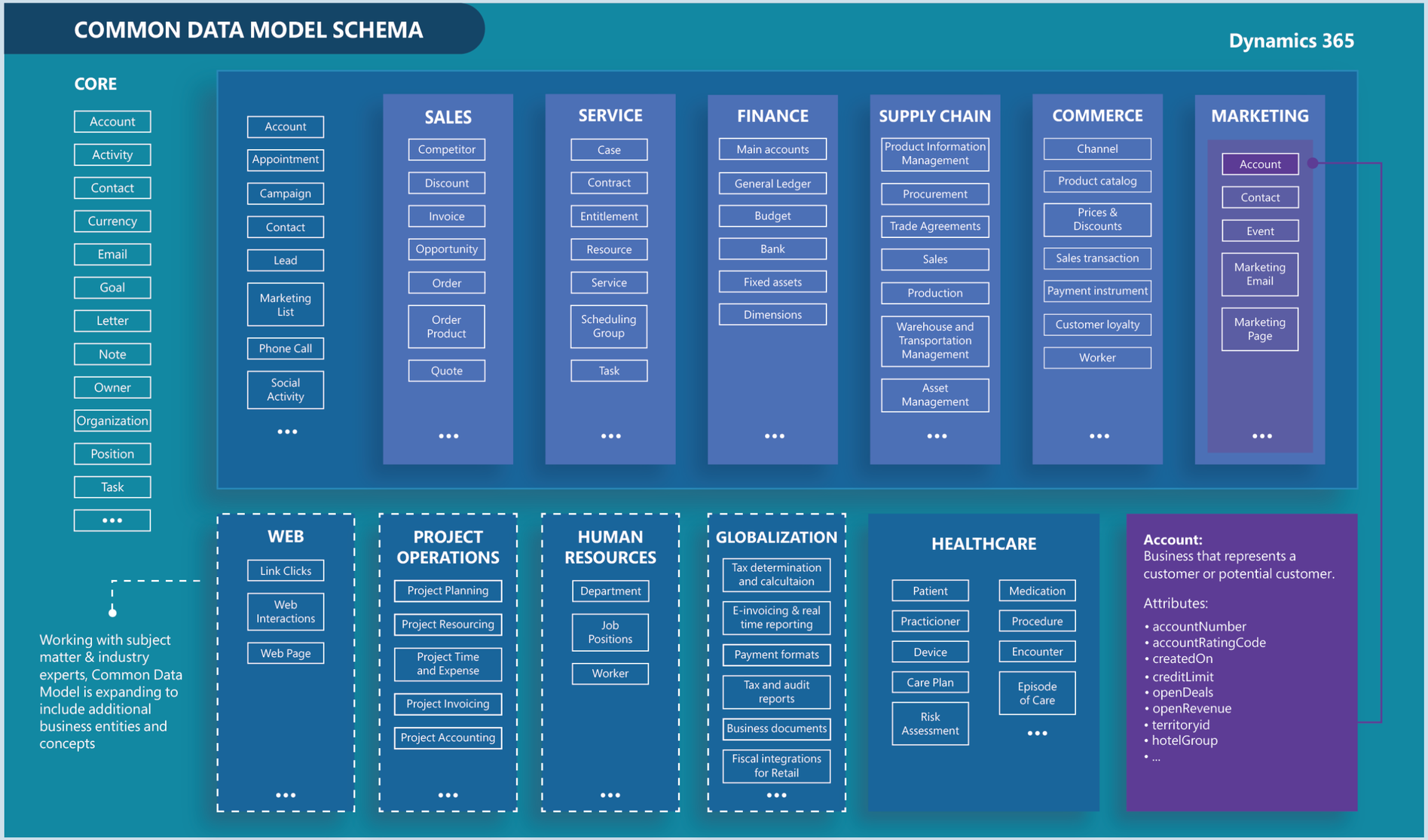
Extend Entities for all consumers

Simplified integration and disambiguation of data

Microsoft

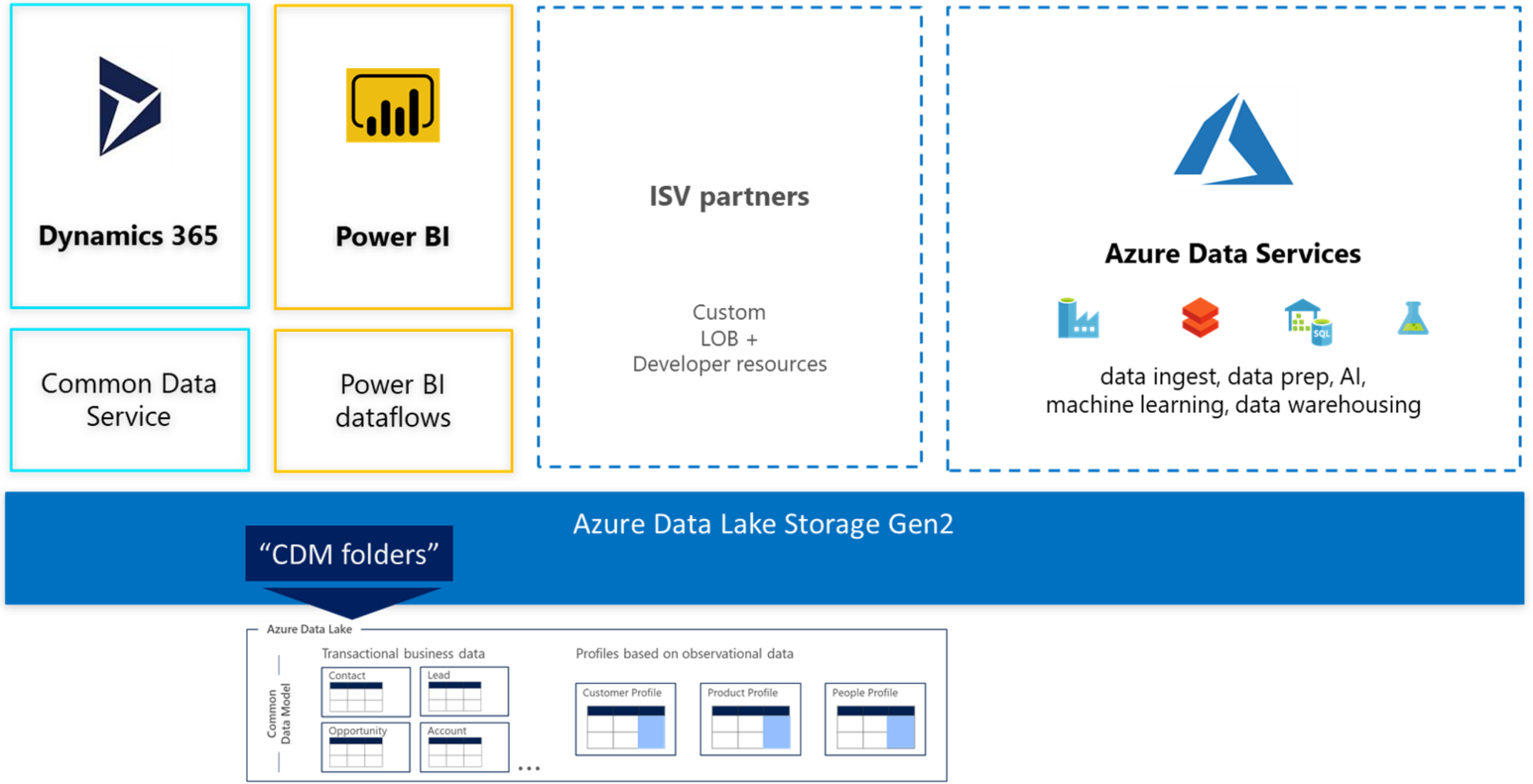
INTEGRATE & DISAMBIGUATE DATA WITH

THE COMMON DATA MODEL

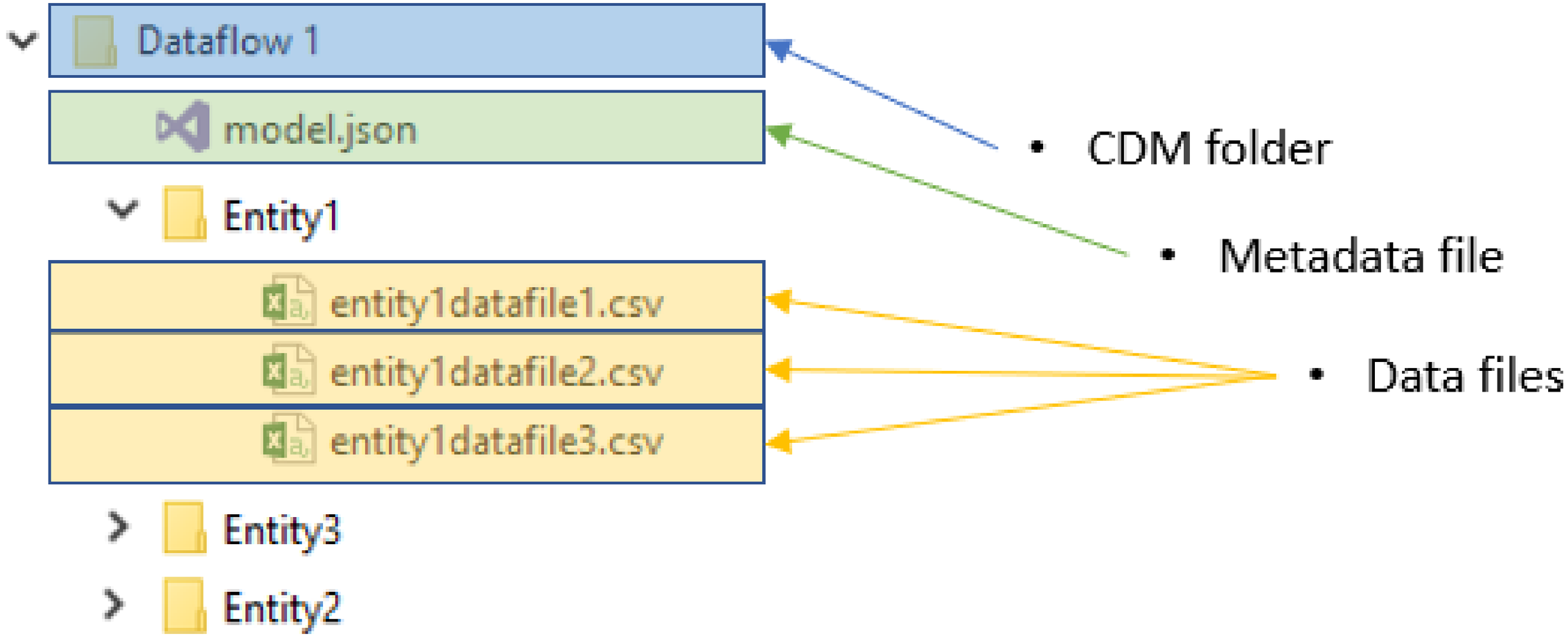


Decision Makers, Business analysts ⟷ Data scientists, Data engineers

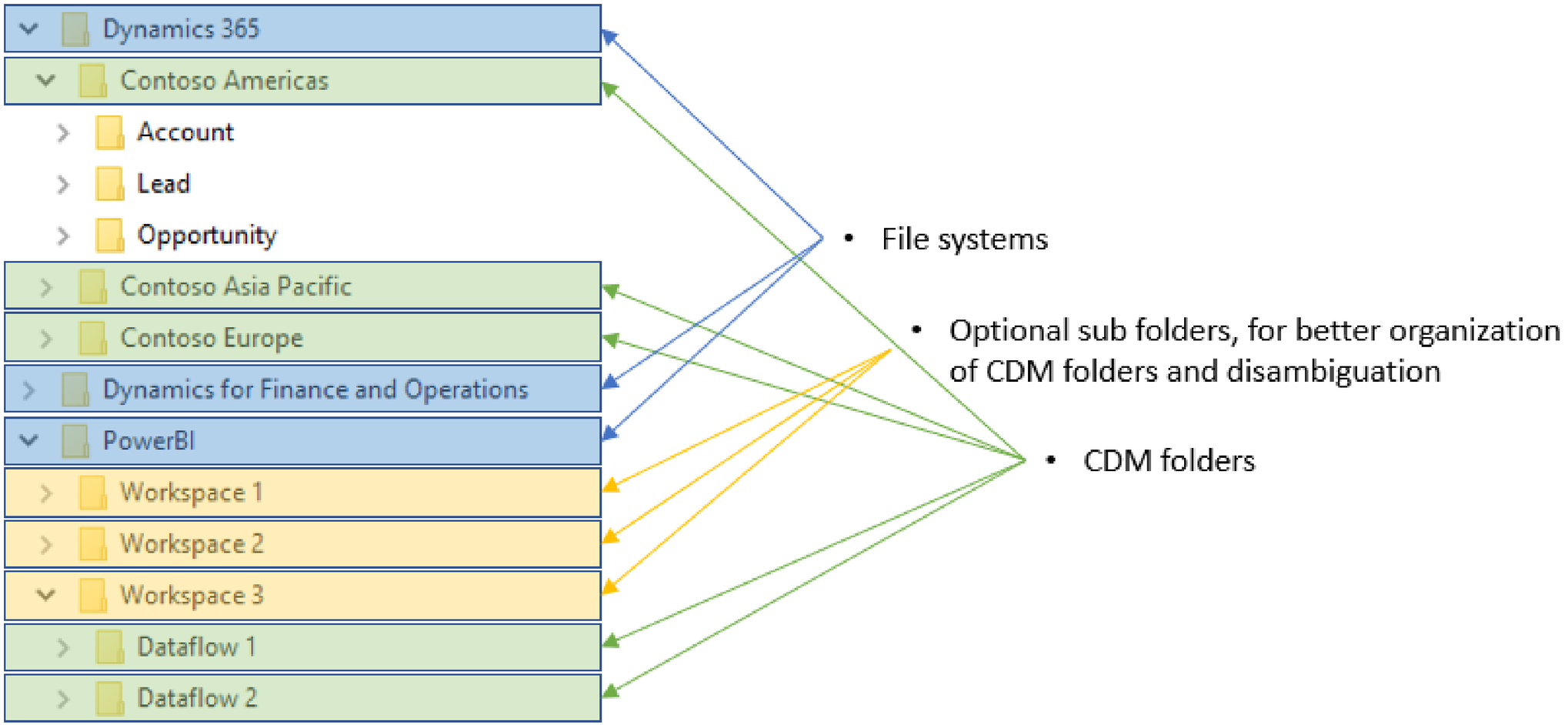
No code, low code — Low to high code



Common Data Model

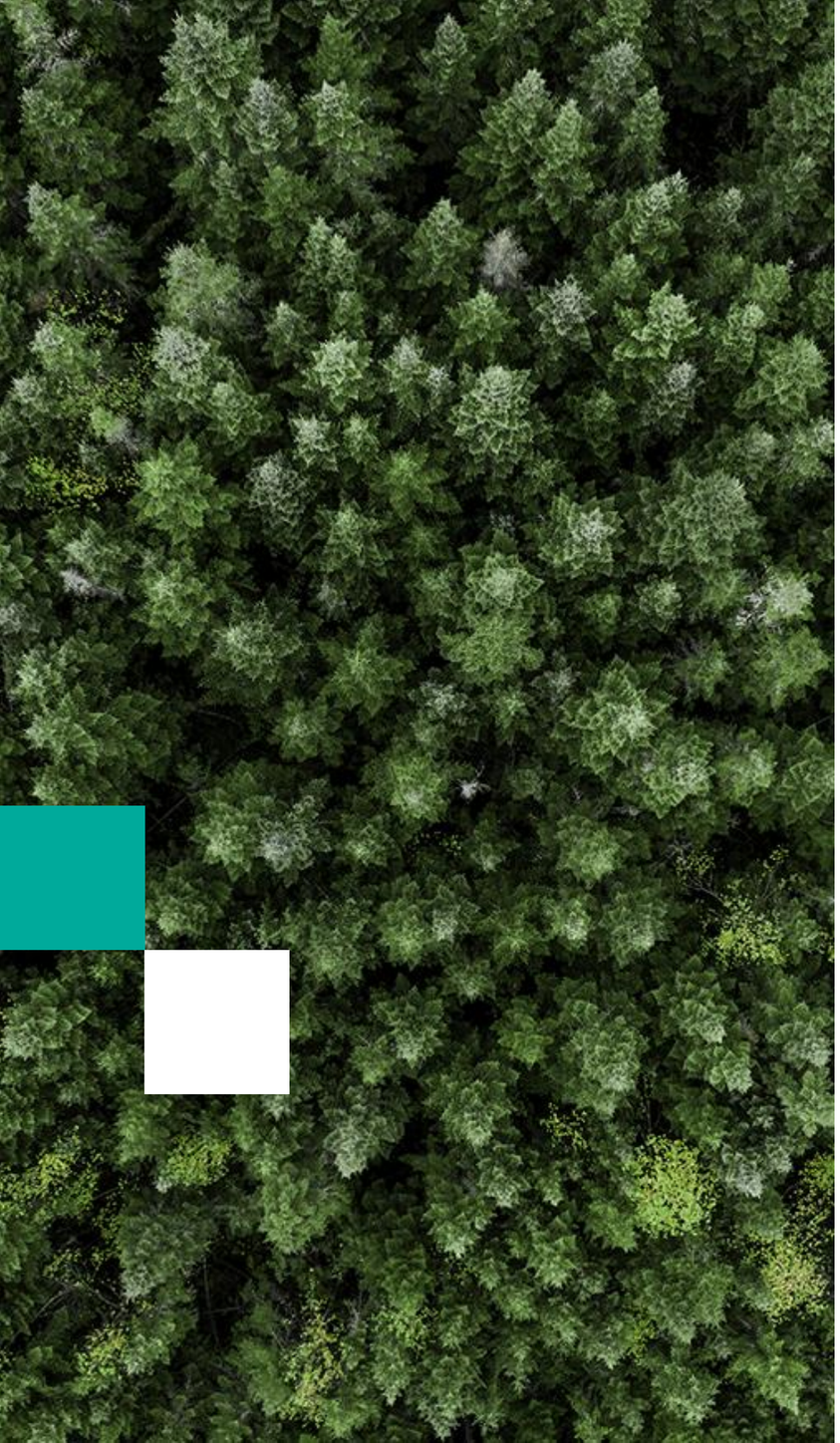


Common Data Model



Common Data Model

Demo



How?

Data Refresh

Data Refresh

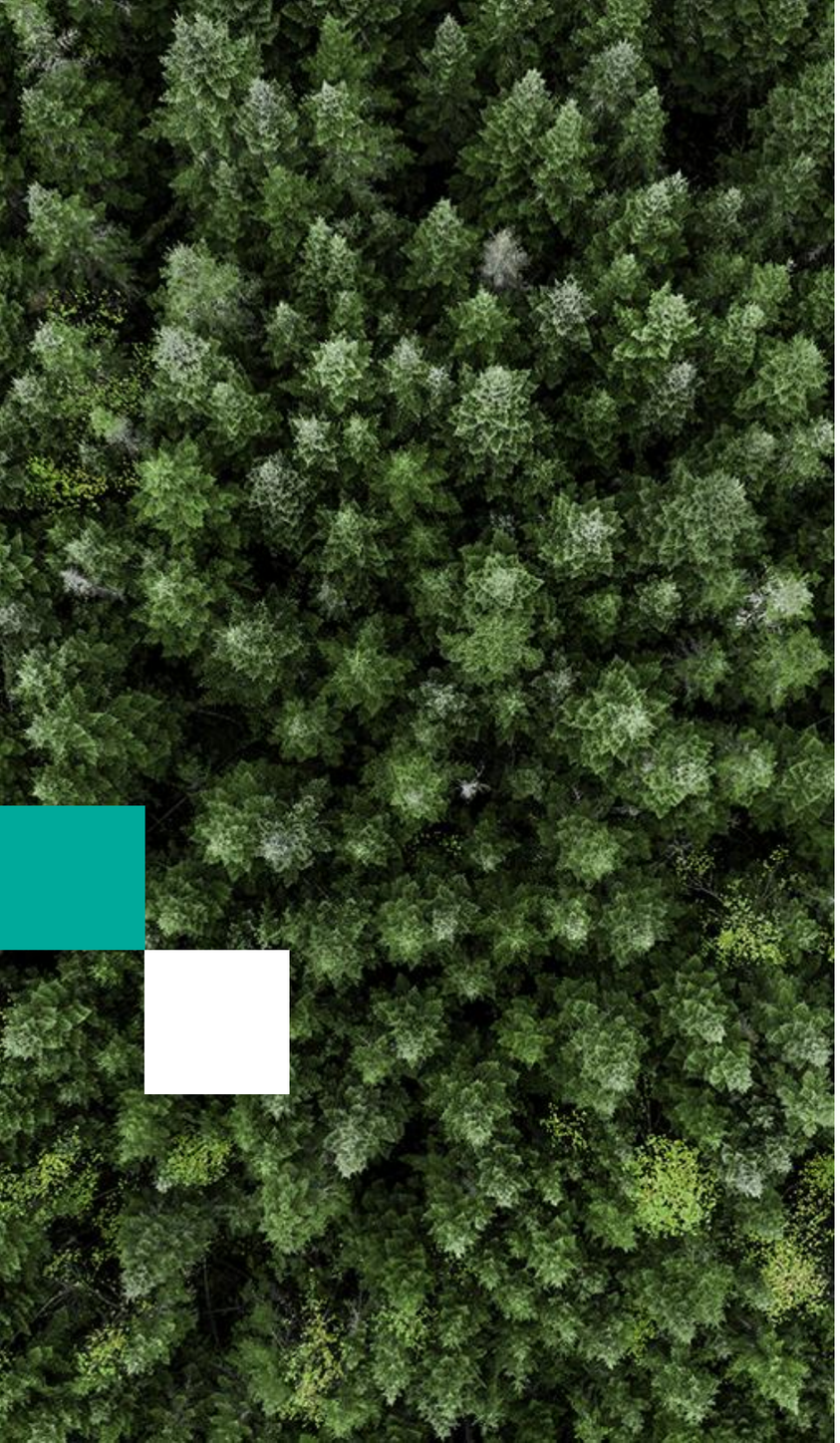
Trigger Manual refresh in the UI

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?)



How?

Query Reusage

Query Reusability

No developer experience in Power BI Desktop

- Copy/Paste queries between environments

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

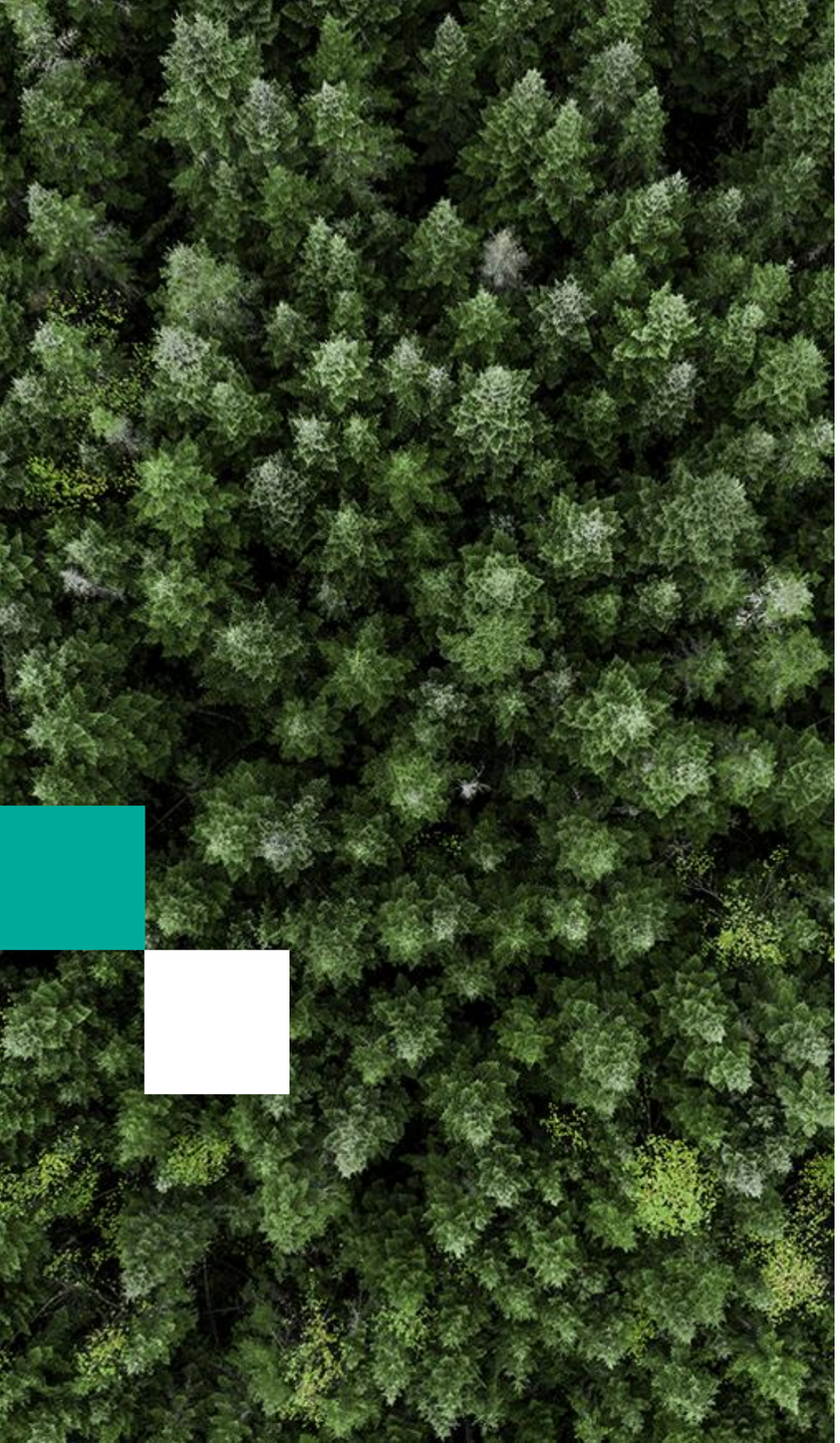
Query Reusability

Linked/Computed Entities (Premium/PPU Only)

- In-lake Compute, which requires dedicated capacity
- Can Reference any Entity in any Workspace
- Data is only stored in the original Entity

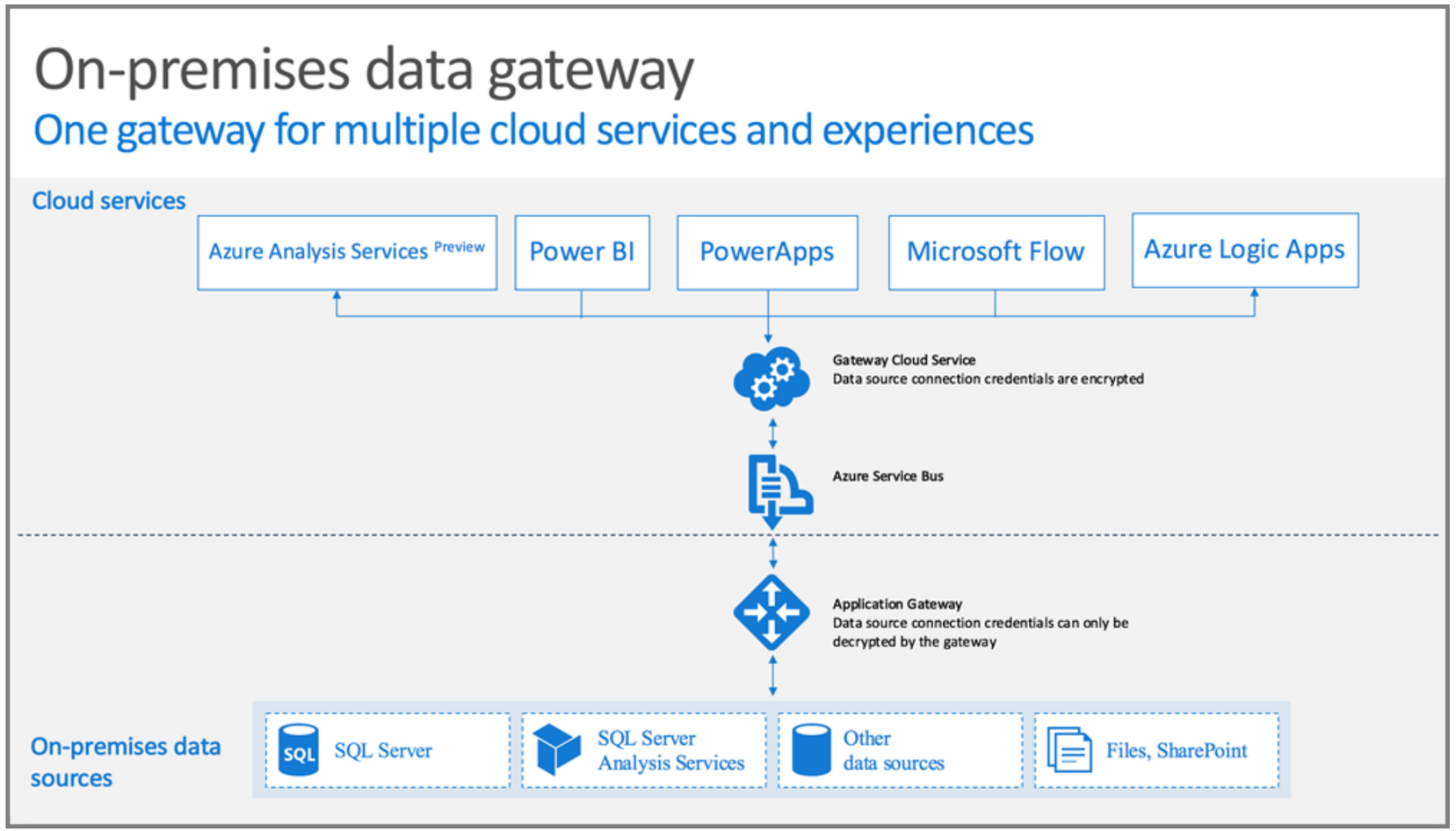
Query Reusability

Demo



Gateways & Security

On-premises Datasources



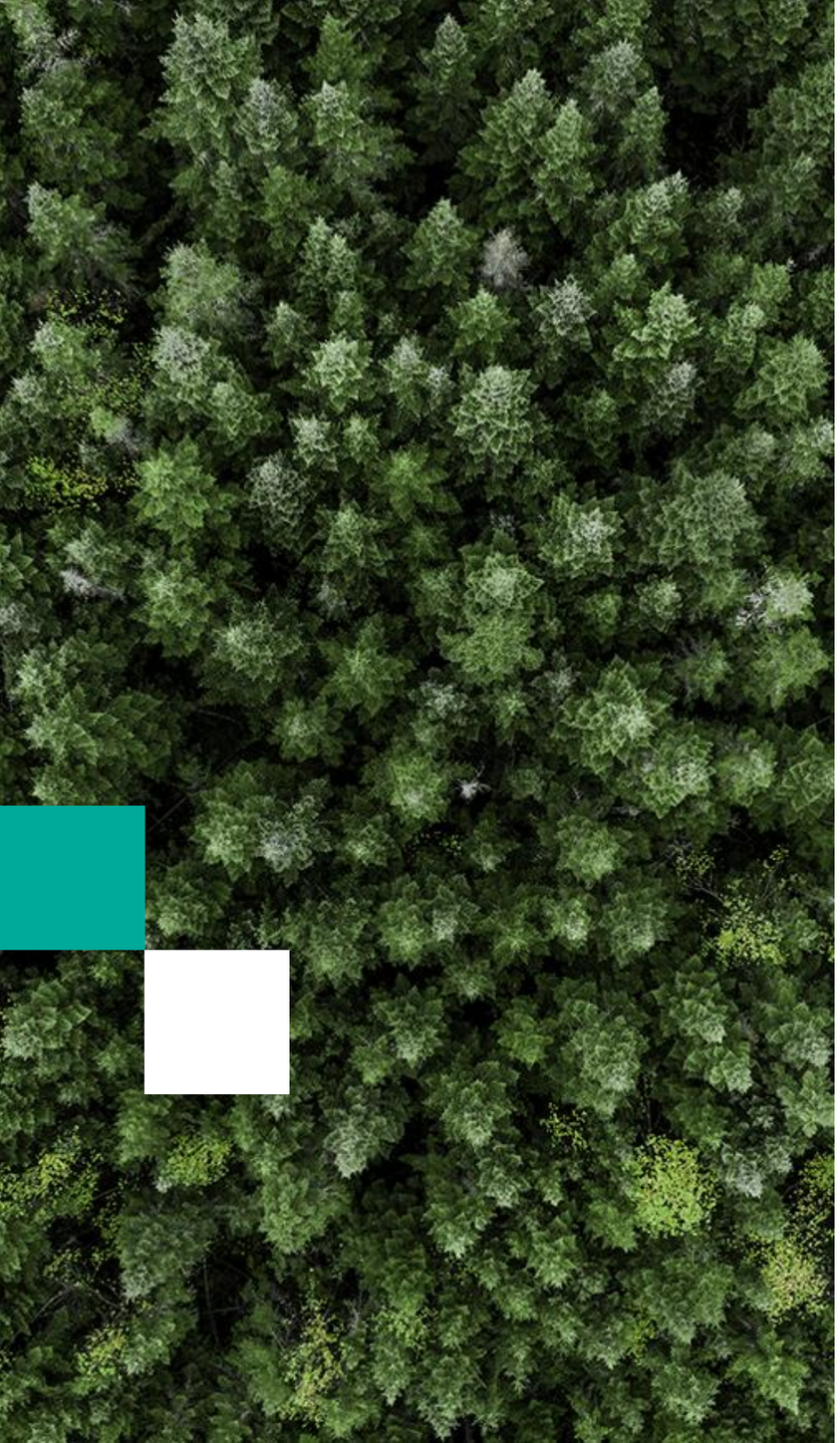
Securing dataflows

Dataflows reside in Workspaces

“Secure”/Hide Linked Entities by disabling load

Datasets using Dataflows will likely be Import Mode

- Security is the responsibility of the dataset designer!



Why?

Where do dataflows fit in?

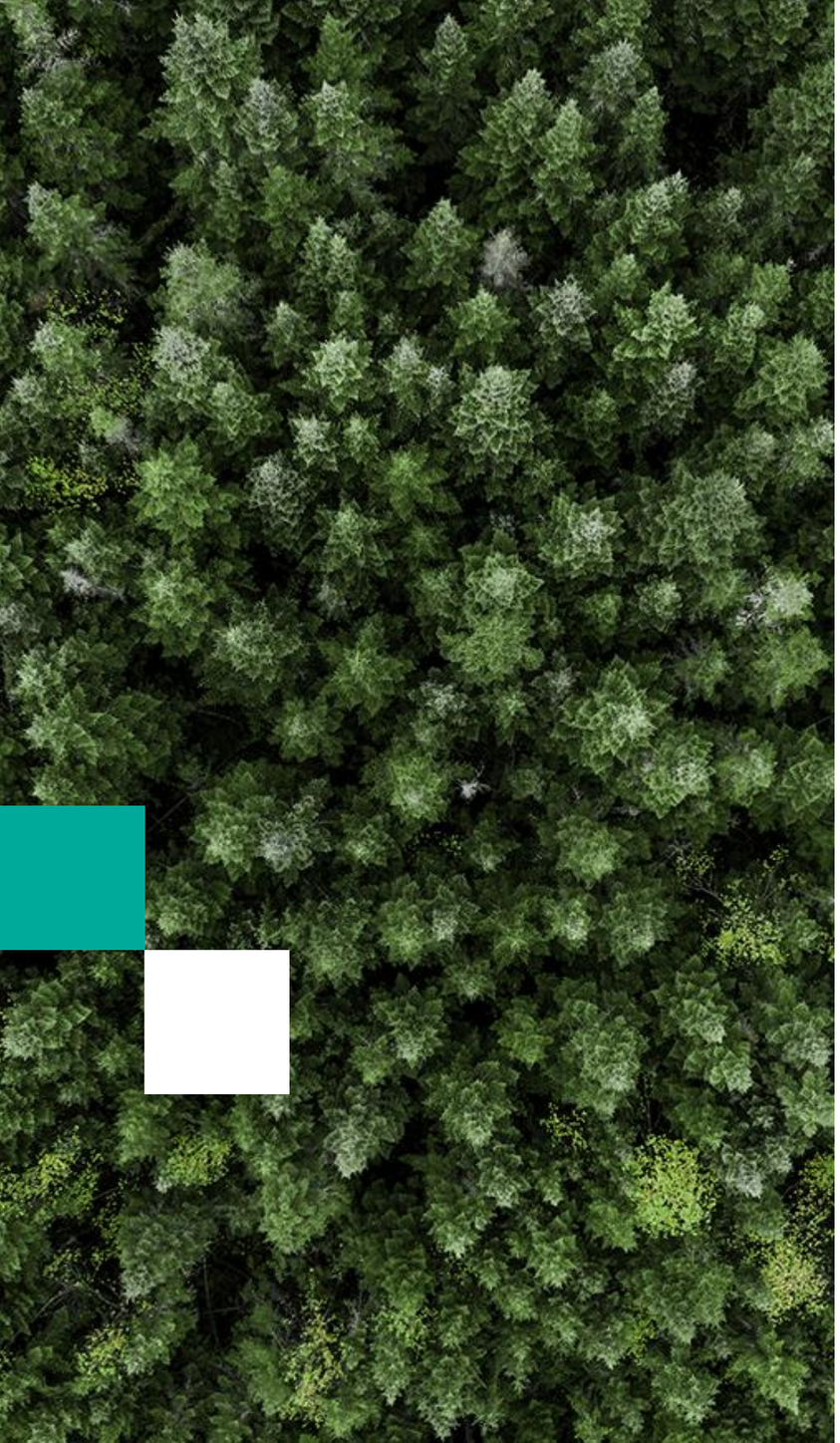
Without dataflows, users might

- Be blocked on IT involvement
- Use Excel and manual processes
- Require 3rd party data preparation tools

Where do dataflows fit in?

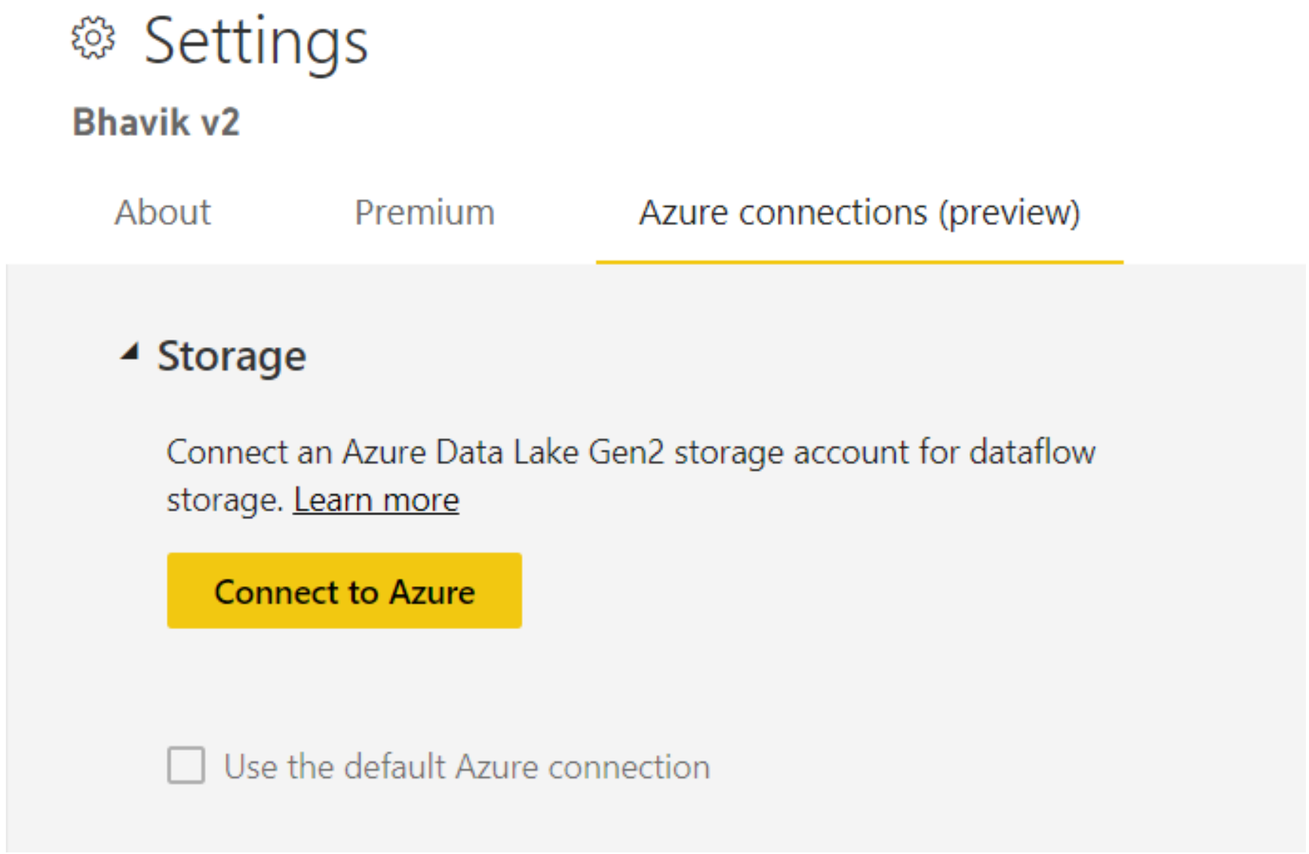
Dataflows are for Power Query users

- 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



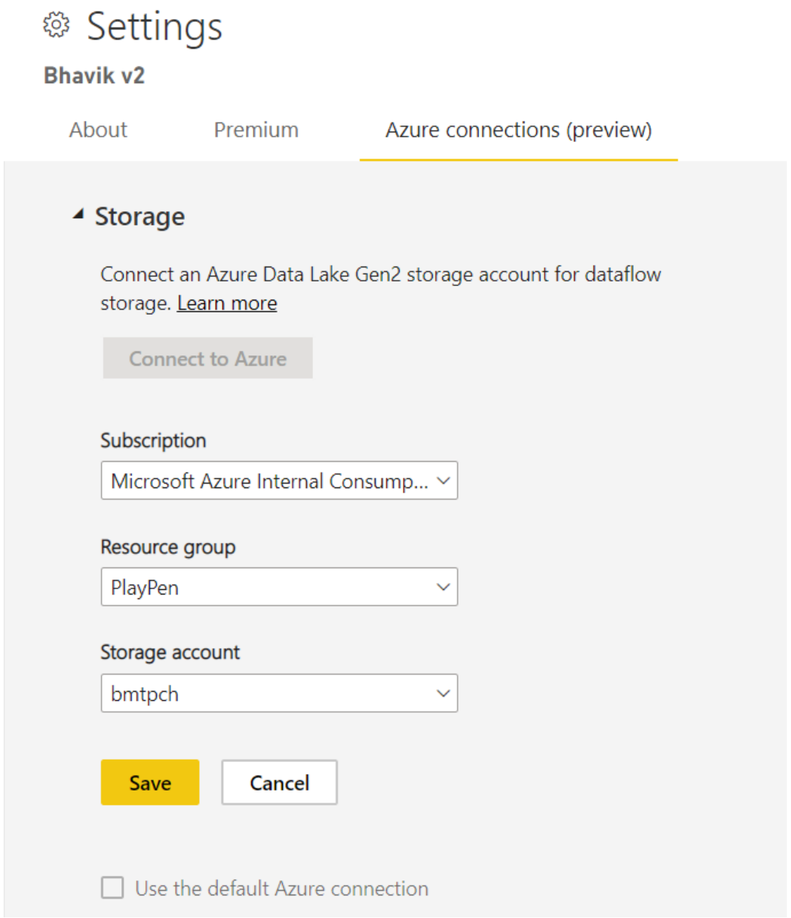
Extending dataflows

Bring your own Storage Account



https://powerbi.microsoft.com/en-us/blog/power-bi-dataflows-multiple-data-lakes-support/

Bring your own Storage Account



External CDM Folders

CDM Folders is an open standard

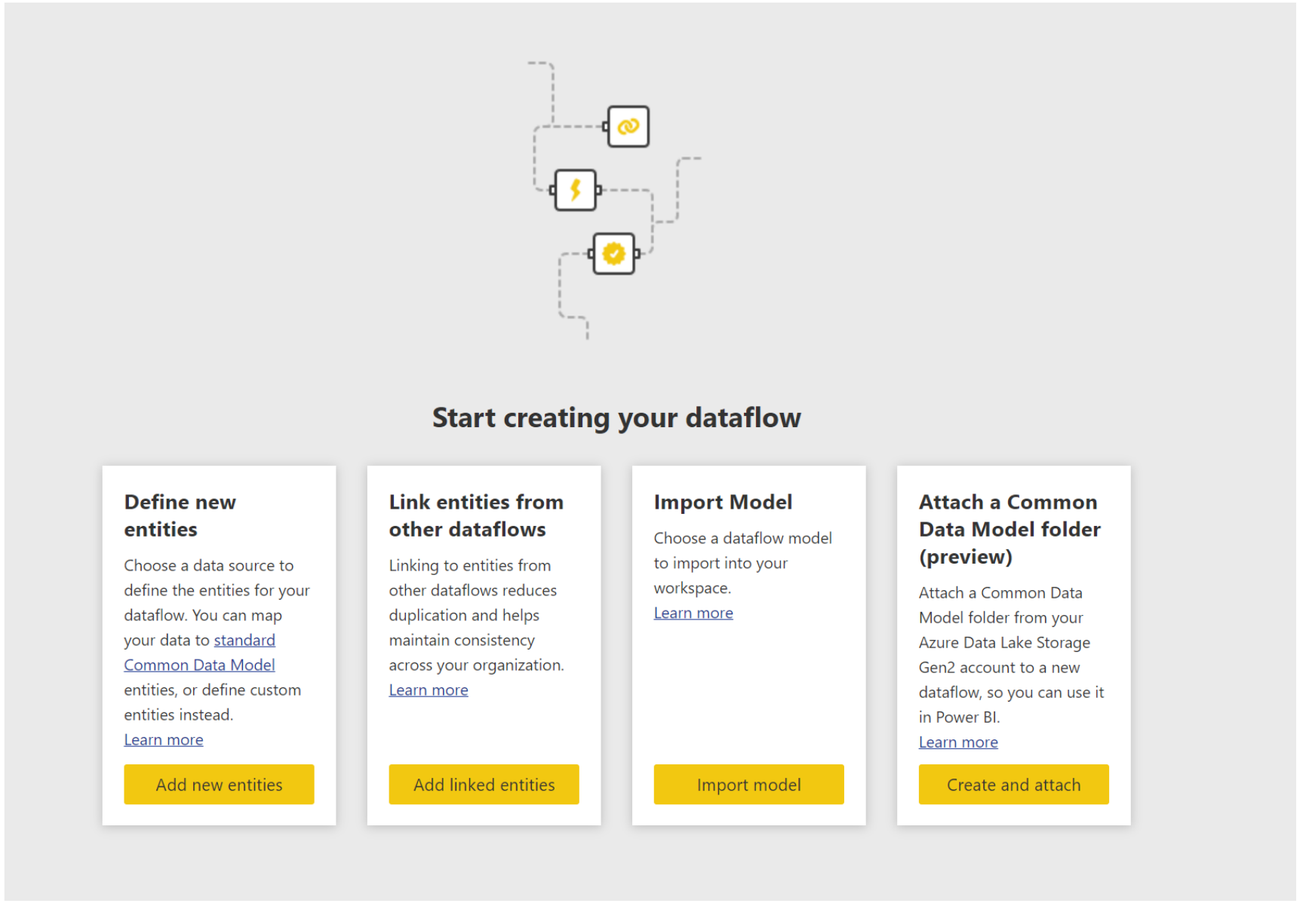
Any tool that can:

- Access ADLSg2
- Output JSON
- Create the correct manifest format

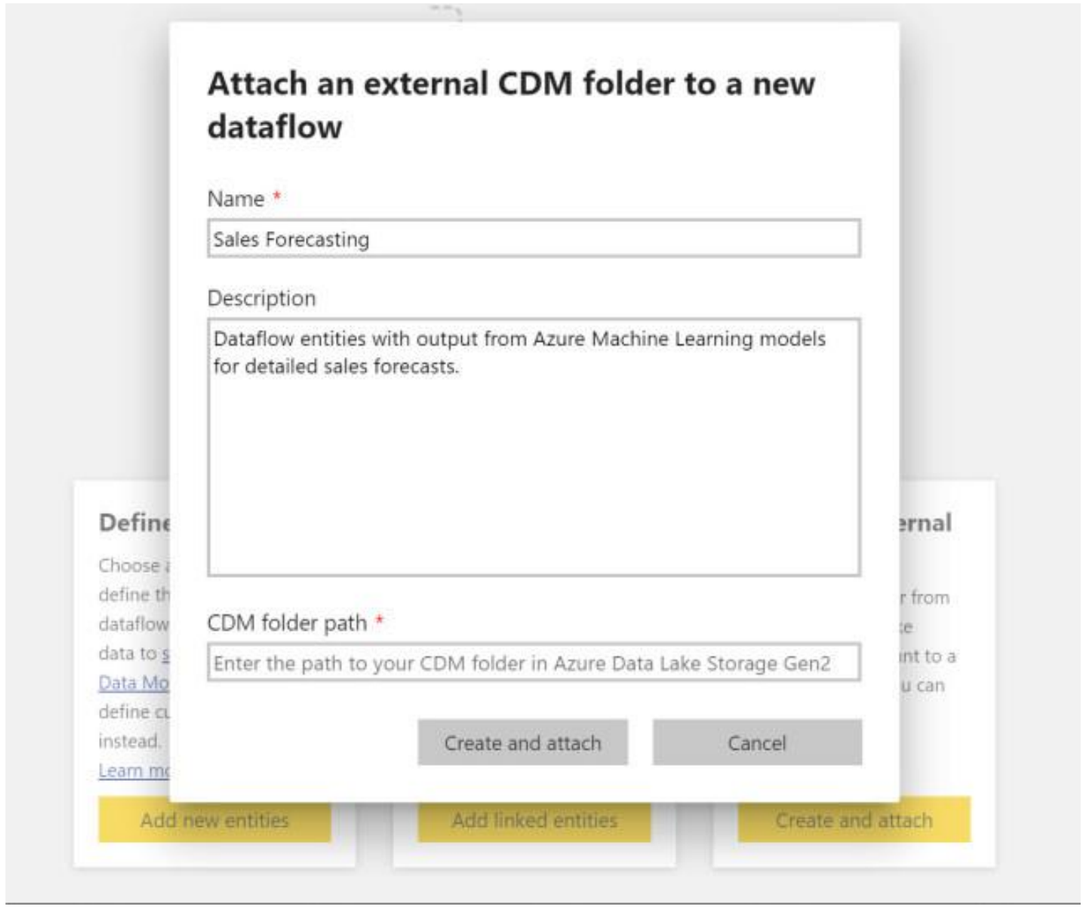
Link External CDM Folder in Power BI

Done!

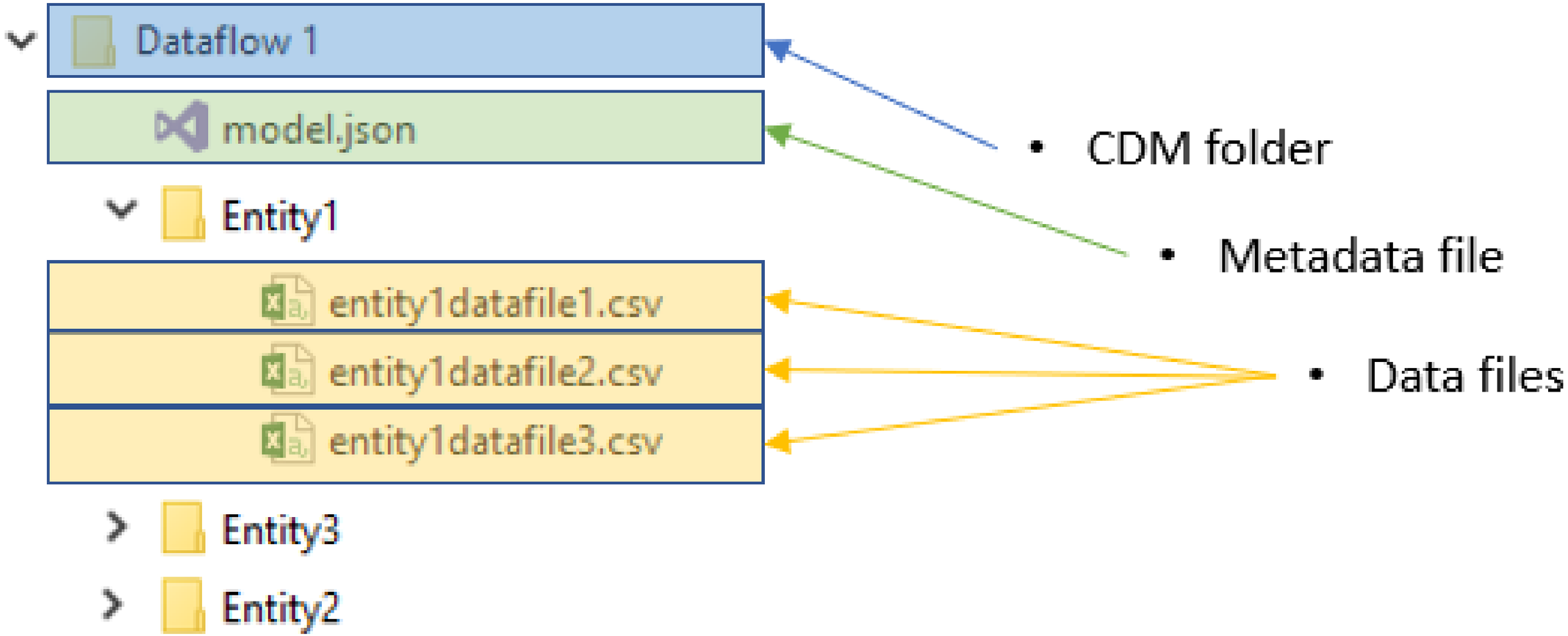
External CDM Folders

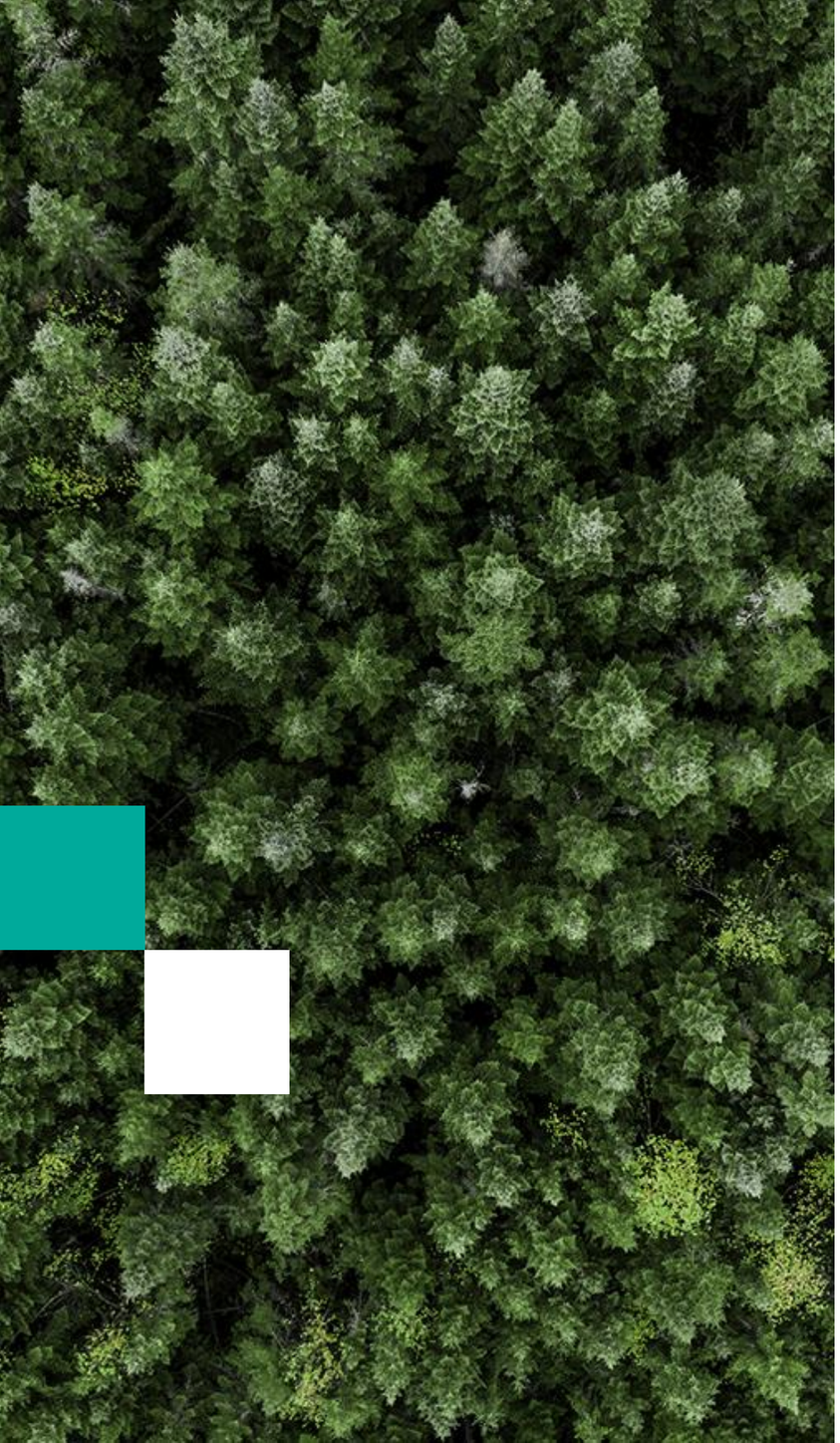


External CDM Folders



External CDM Folders





What’s the catch?

Considerations & Limitations

The cool stuff is Premium / PPU only

Validation of queries can take a looooooonng time

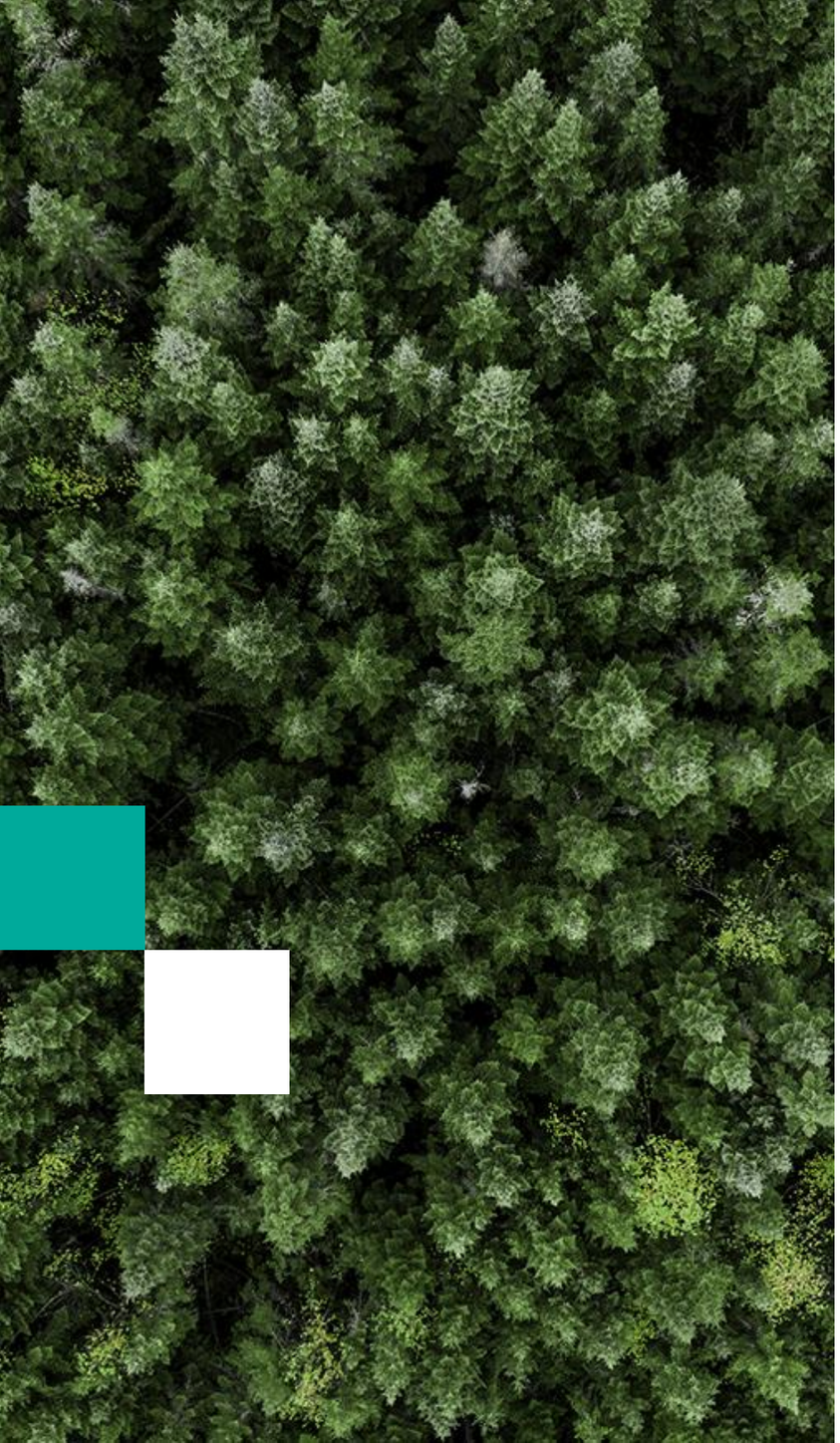
Modifying a schema will drop all data

Dataflows can only be modified by their owners

Dataflows using gateway data sources do not support multiple credentials

When working with APIs (for CI/CD) the story isn’t smooth yet

- Exporting/Importing creates a new ID
- Importing will not fix existing references to linked entities

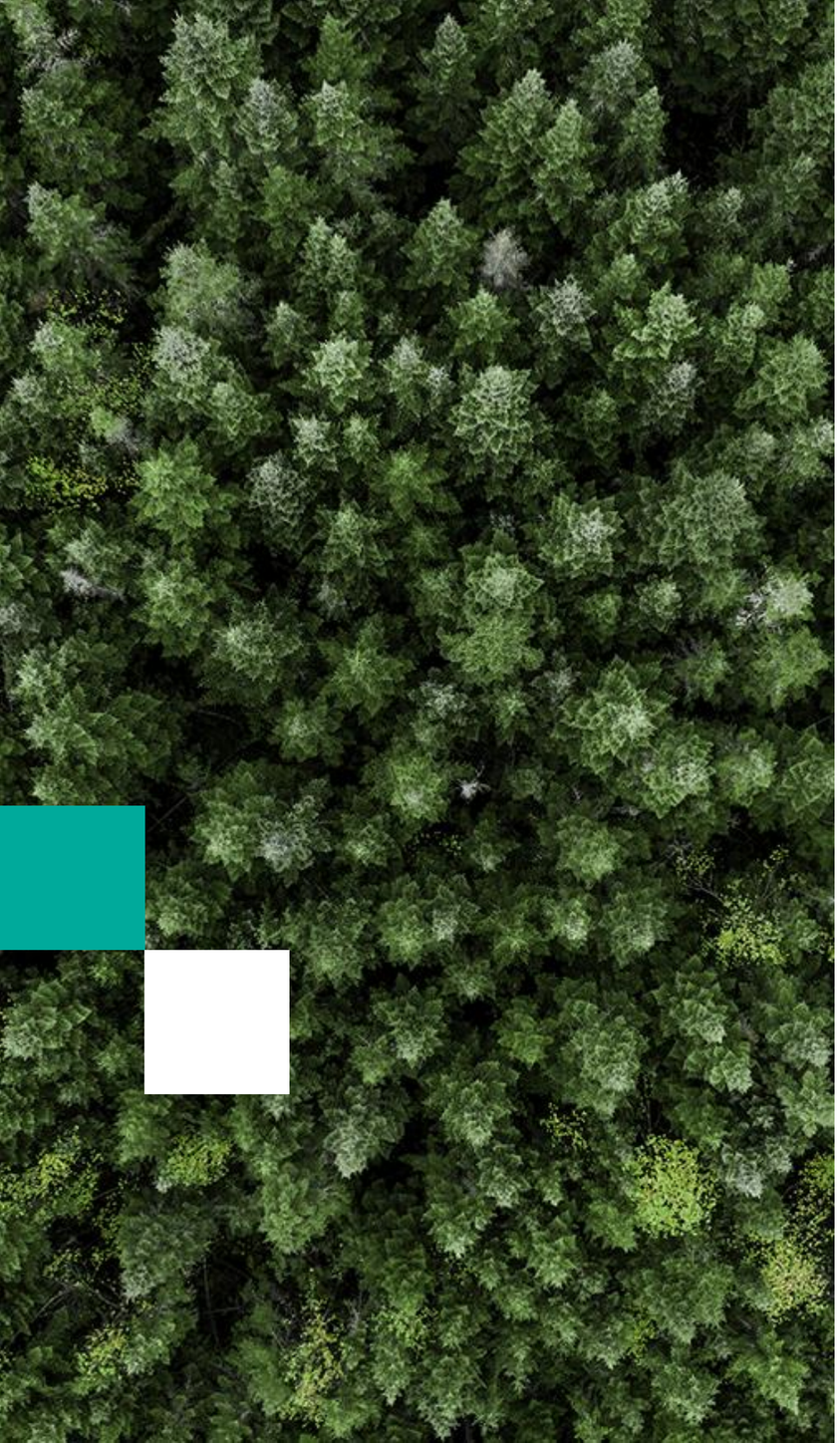


BONUS!

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



Takeaways

Takeaways

Business Driven Initiatives

Fill existing gaps

Quick prototyping

Strive for IT handover to operationalize later on

Configure your own ADLSg2 Storage

Power BI dataflows – April Update

Coming Soon

Careful reading might have noticed a few teasers. Indeed, we have some exciting features that will be available in the coming months ahead. Currently, we are laser focused on **performance and reliability improvements**, and **delivering on YOUR top asks, including**:

- **Background Validation**
  - With this update, users will be able to Save a dataflow, leave the screen, and continue working. Validation now takes place in the background so users can save the dataflow without friction.
- **Multiple Contributors to Dataflows**
  - We're working to allow non-owners to edit Dataflows, see the applied steps, and manage them – making Dataflows more collaborative so that teams can be productive.
- **Notifications to Non-Owners**
  - Sending refresh failure emails to users or groups, just like Datasets
- **Deployment Pipelines**
  - We'll bring support for Deployment Pipelines to Dataflows, allowing you to deploy and update Dataflows across the lifecycle stages and make them more enterprise grade.
- **Updated Guidance**
  - Advice for common scenarios and prescriptive how-to's

https://powerbi.microsoft.com/en-us/blog/whats-new-in-dataflows-april-2021/

The Self-Service BI Hoax

"Products and technology don't enable Self-Service BI. People, processes, and methodologies do"

Nimrod Avissar on LinkedIn Pulse

Resources

https://docs.microsoft.com/en-us/power-bi/service-dataflows-best-practices

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/

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Resources

https://docs.microsoft.com/en-us/power-bi/transform-model/dataflows/dataflows-azure-data-lake-storage-integration

https://docs.microsoft.com/en-us/power-bi/transform-model/dataflows/dataflows-premium-features

https://docs.microsoft.com/en-us/power-bi/transform-model/dataflows/dataflows-machine-learning-integration

https://docs.microsoft.com/en-us/power-bi/transform-model/dataflows/dataflows-features-limitations

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Resources

https://docs.microsoft.com/en-us/power-bi/transform-model/dataflows/dataflows-directquery

https://docs.microsoft.com/en-us/power-bi/transform-model/dataflows/dataflows-understand-optimize-refresh

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Resources

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Resources

Dataflows Whitepaper – Amir Netz

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