

Abstract geometric lines in the top left corner of the slide, consisting of several overlapping, tilted rectangles and polygons.

Benni De Jagere

POWER BI DATAFLOWS? WHY YOU NEED TO IMPLEMENT IT!

WHO AM I



Power BI CAT

dataMinds.be Member



@BenniDeJagere



/bennidejagere

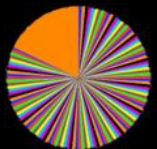


sessionize

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#SayNoToPieCharts

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~~

~~Microsoft Flow~~

~~ADFv2~~

~~Mapping Data Flows~~

~~Wrangling Data Flows~~

~~PowerApps dataflows~~

~~Power Platform dataflows~~

Power BI dataflows!



WHO?

WHO SHOULD USE IT?

POWER USERS

**BUSINESS
ANALYSTS**

TECH SAVVY USERS

EVERYONE ELSE 😊



WHO?

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



ONE ENTITY, MANY DATASETS



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



ONE ENTITY, MANY DATASETS

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?



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



**LET'S TAKE IT FOR
A SPIN!
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

ENTER, POWER BI DATAFLOWS!

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

INTEGRATE & DISAMBIGUATE DATA WITH THE COMMON DATA MODEL

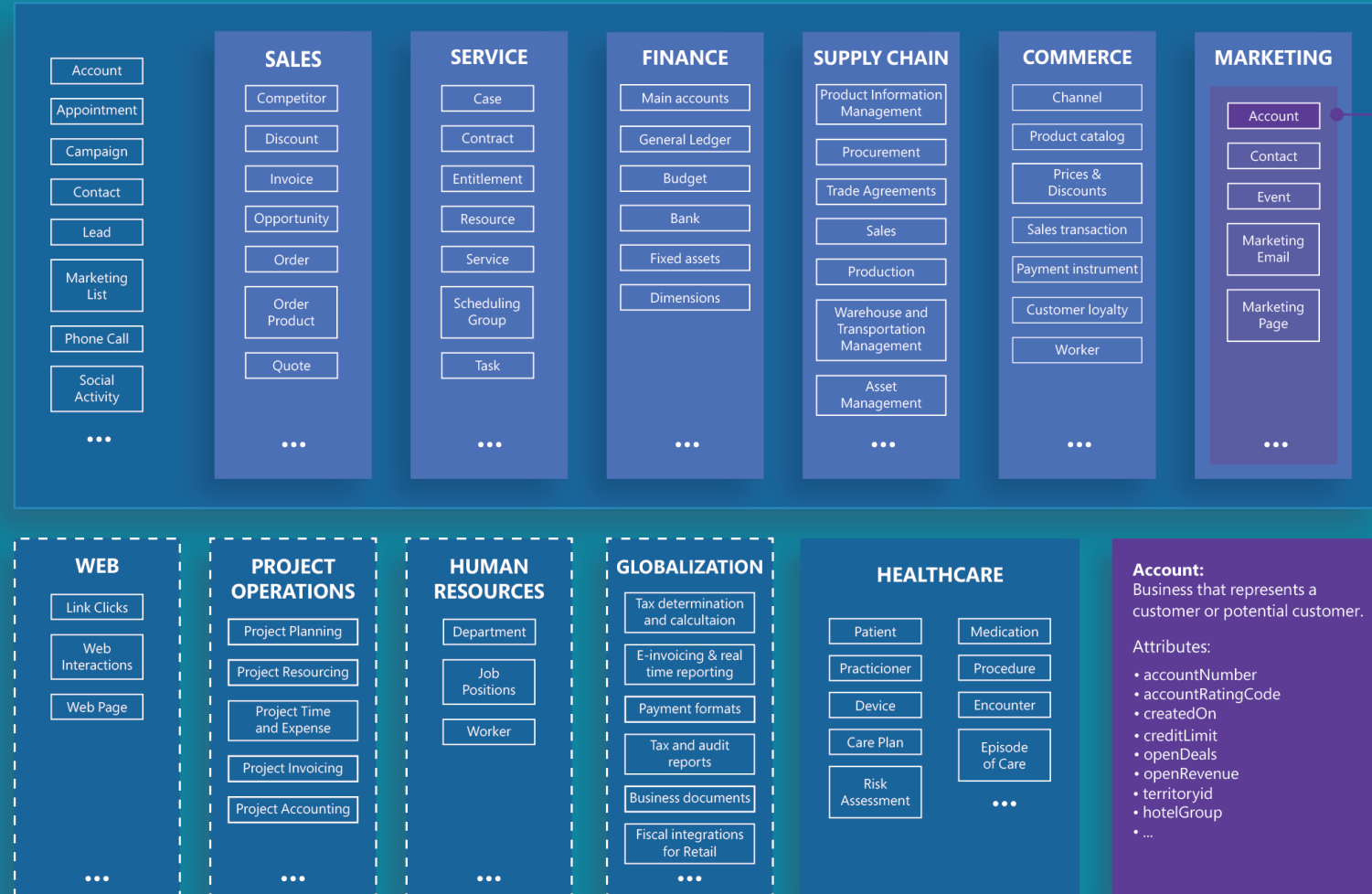
COMMON DATA MODEL SCHEMA

Dynamics 365

CORE

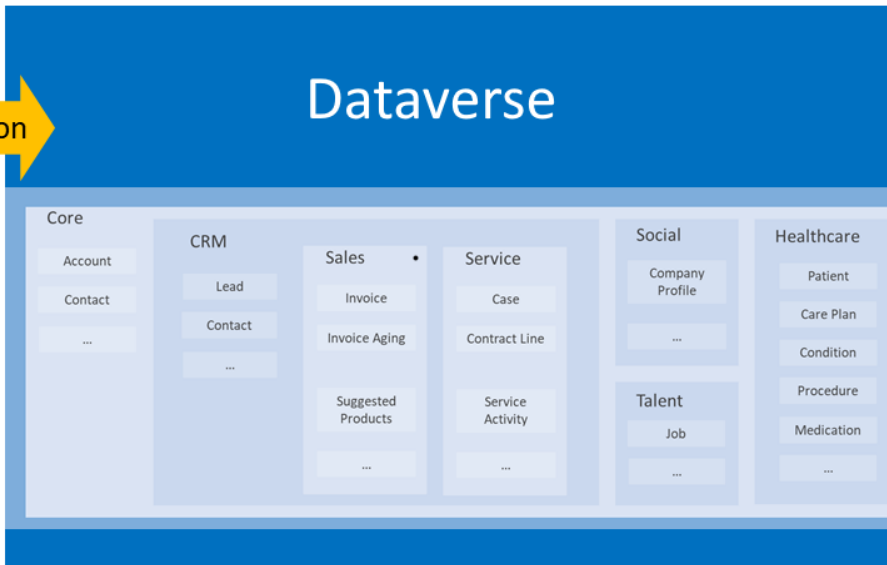
- Account
- Activity
- Contact
- Currency
- Email
- Goal
- Letter
- Note
- Owner
- Organization
- Position
- Task
- ...

Working with subject matter & industry experts, Common Data Model is expanding to include additional business entities and concepts



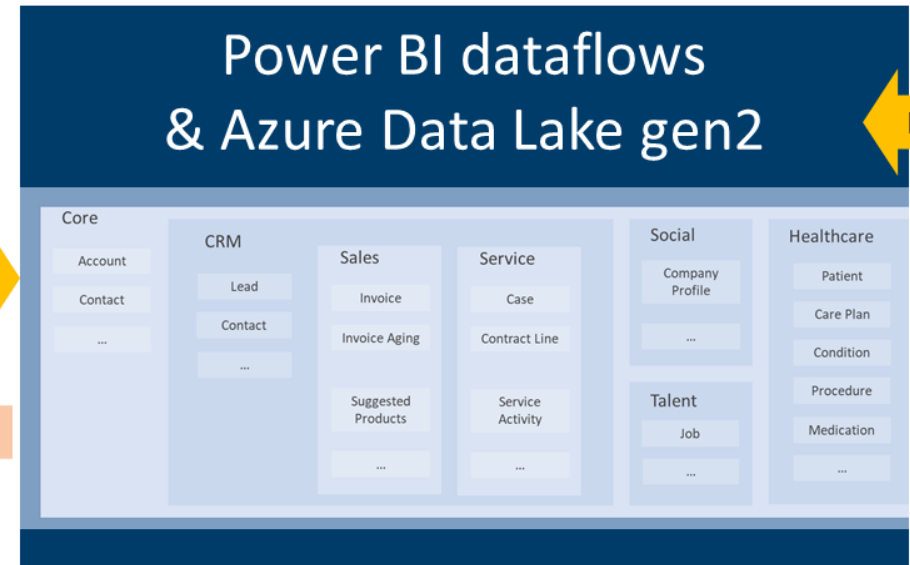


Data Integration



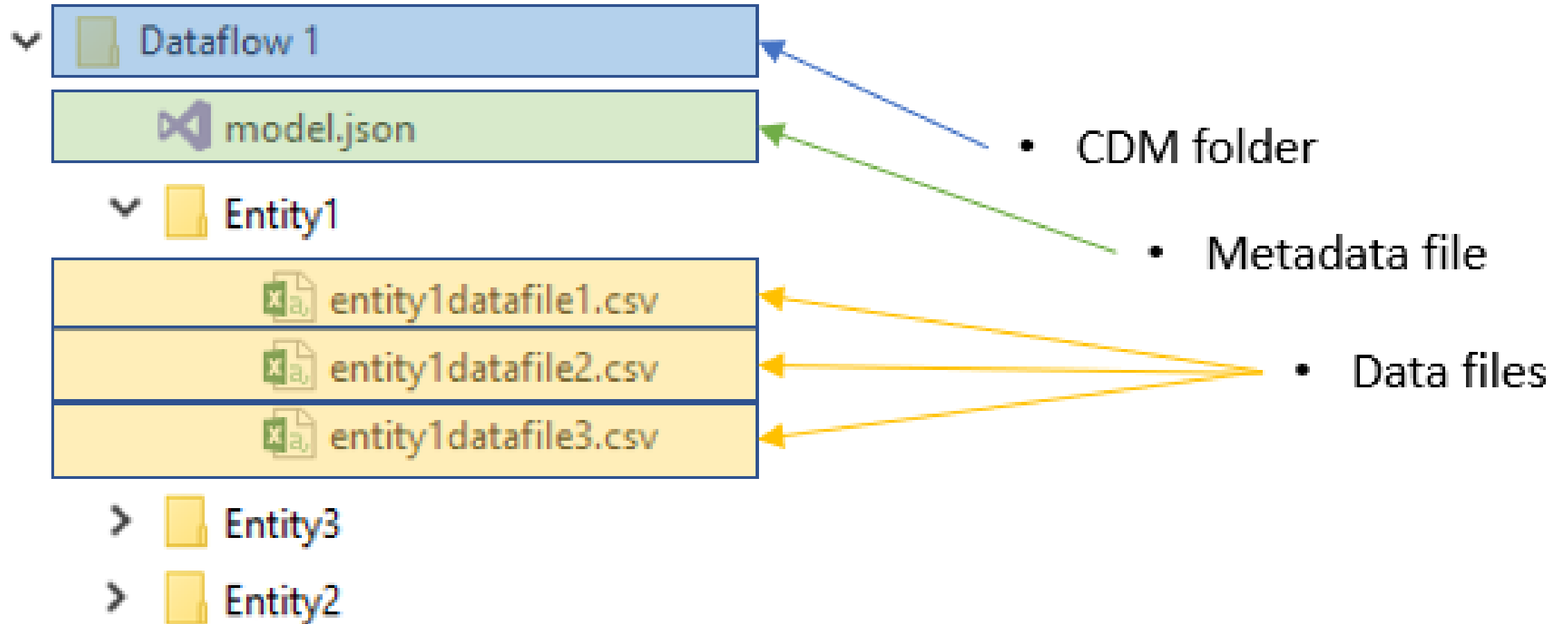
Data Integration

Intelligence

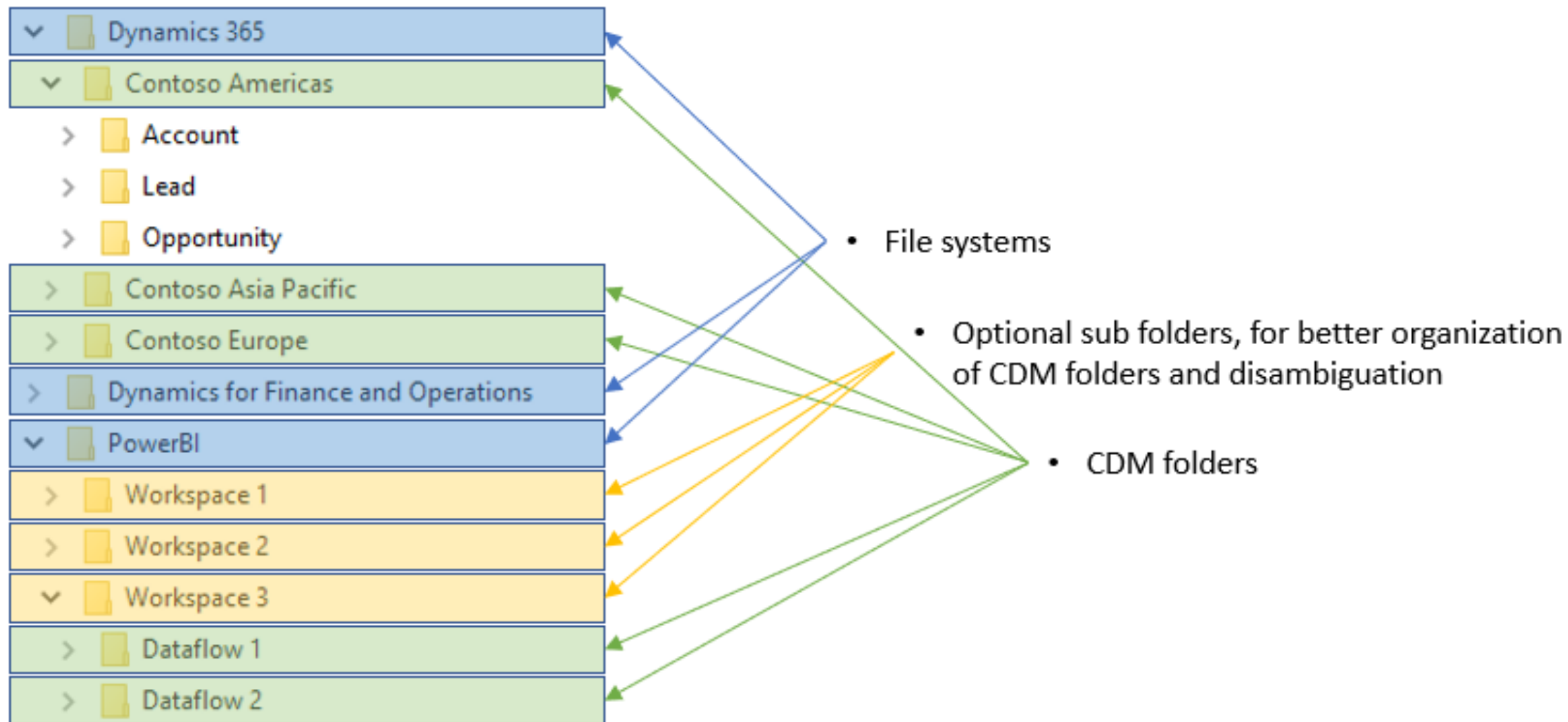


Data Integration

COMMON DATA MODEL



COMMON DATA MODEL





HOW: 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 related dataflows

Incremental Refresh is Premium Only



HOW:

DATA REFRESH

DEMO



**HOW:
QUERY REUSAGE**

QUERY REUSABILITY (PRO)

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 (PREMIUM / PPU)

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



HOW: QUERY REUSAGE DEMO



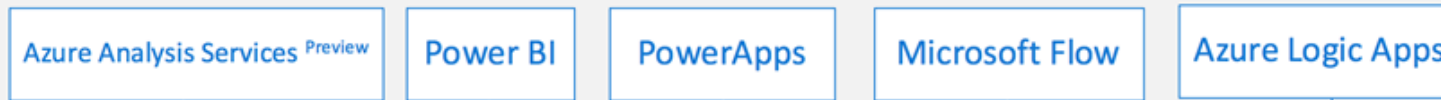
HOW: GATEWAYS

GATEWAYS

On-premises data gateway

One gateway for multiple cloud services and experiences

Cloud services



Gateway Cloud Service
Data source connection credentials are encrypted



Azure Service Bus



Application Gateway
Data source connection credentials can only be decrypted by the gateway

On-premises data sources



SQL Server



SQL Server Analysis Services



Other data sources



Files, SharePoint



**HOW:
SECURITY**

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

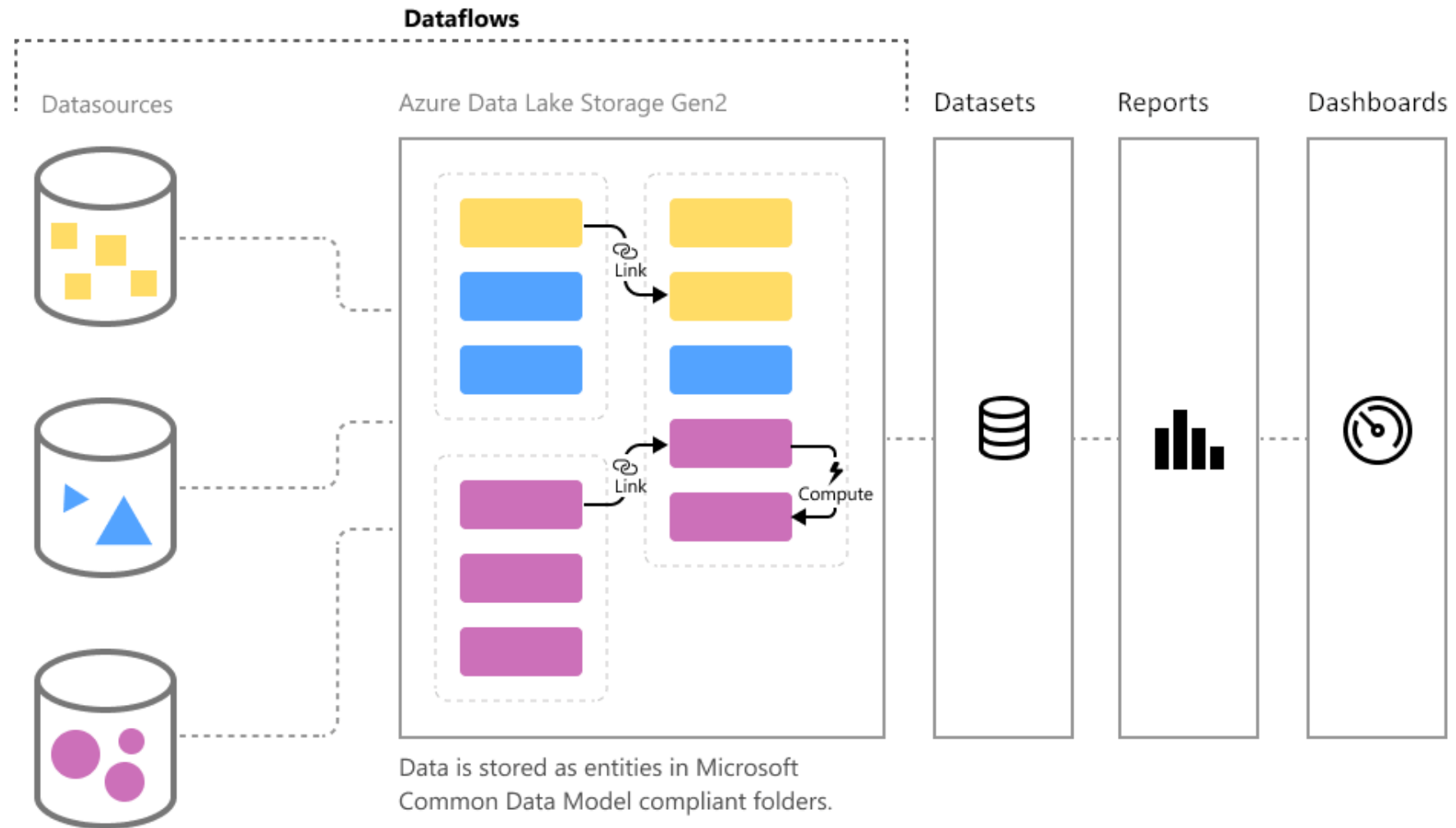
Multi-stage, multi-user data prep workflows

Dataflows fill a self-service gap in the end-to-end story



EXTENDING DATAFLOWS

EXTENDING DATAFLOWS



BRING YOUR OWN STORAGE ACCOUNT

Settings

Bhavik v2

About

Premium

Azure connections (preview)

Storage

Connect an Azure Data Lake Gen2 storage account for dataflow storage. [Learn more](#)

Connect to Azure

☐ Use the default Azure connection

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

BRING YOUR OWN STORAGE ACCOUNT

Settings

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Connect to Azure

Subscription

Microsoft Azure Internal Consump... ▾

Resource group

PlayPen ▾

Storage account

bmtpch ▾

Save

Cancel

☐ Use the default Azure connection

EXTERNAL CDM FOLDERS

CDM Folders is an open standard

Any tool that can:

- Access ADLSg2

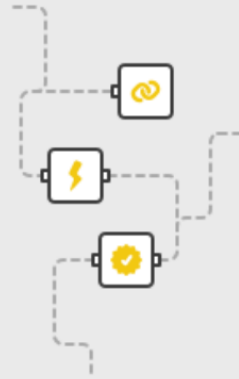
- Output JSON

- Create the correct manifest format

Link External CDM Folder in Power BI

Done!

EXTERNAL CDM FOLDERS



Start creating your dataflow

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

Import Model

Choose a dataflow model to import into your workspace. [Learn more](#)

Import model

Attach a Common Data Model folder (preview)

Attach a Common Data Model 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 dataflow to define the data to store in the data model. You can also define a new dataflow instead. [Learn more](#)

External

Choose a CDM folder from the list of folders in the data lake. You can also create a new folder.

Add new entities

Add linked entities

Create and attach



**WHAT'S THE
CATCH?**

EXTERNAL CDM FOLDERS

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

TAKEWAYS

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 2021 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



RESOURCES

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/>

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>

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>

<https://docs.microsoft.com/en-us/power-bi/transform-model/dataflows/dataflows-streaming>

<https://docs.microsoft.com/en-us/common-data-model/>

RESOURCES

<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>

<https://ssbipolar.com/2020/09/23/session-resources-patterns-for-adopting-dataflows-in-power-bi/>

RESOURCES

[Dataflows Whitepaper – Amir Netz](#)

WHO AM I



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/bennidejagere

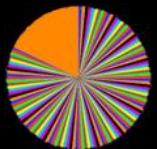


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#SayNoToPieCharts

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[HTTPS://SQLB.IT/?7007](https://sqlb.it/?7007)



A series of white, thin, overlapping geometric lines on a black background, forming a complex, abstract shape on the left side of the slide.

THANK YOU!