



nordic.  
summit

End to End Power BI for the Power Platform

DIAMOND SPONSOR



The Digital  
**Neighborhood**

PLATINUM SPONSOR



Microsoft

# GOLD SPONSORS



# SILVER SPONSORS



# BRONZE SPONSORS





Laura GB

Problem Solver

End to End Power BI  
for Power Platform



# Laura GB

## Problem Solver at Avanade

Data Platform MVP



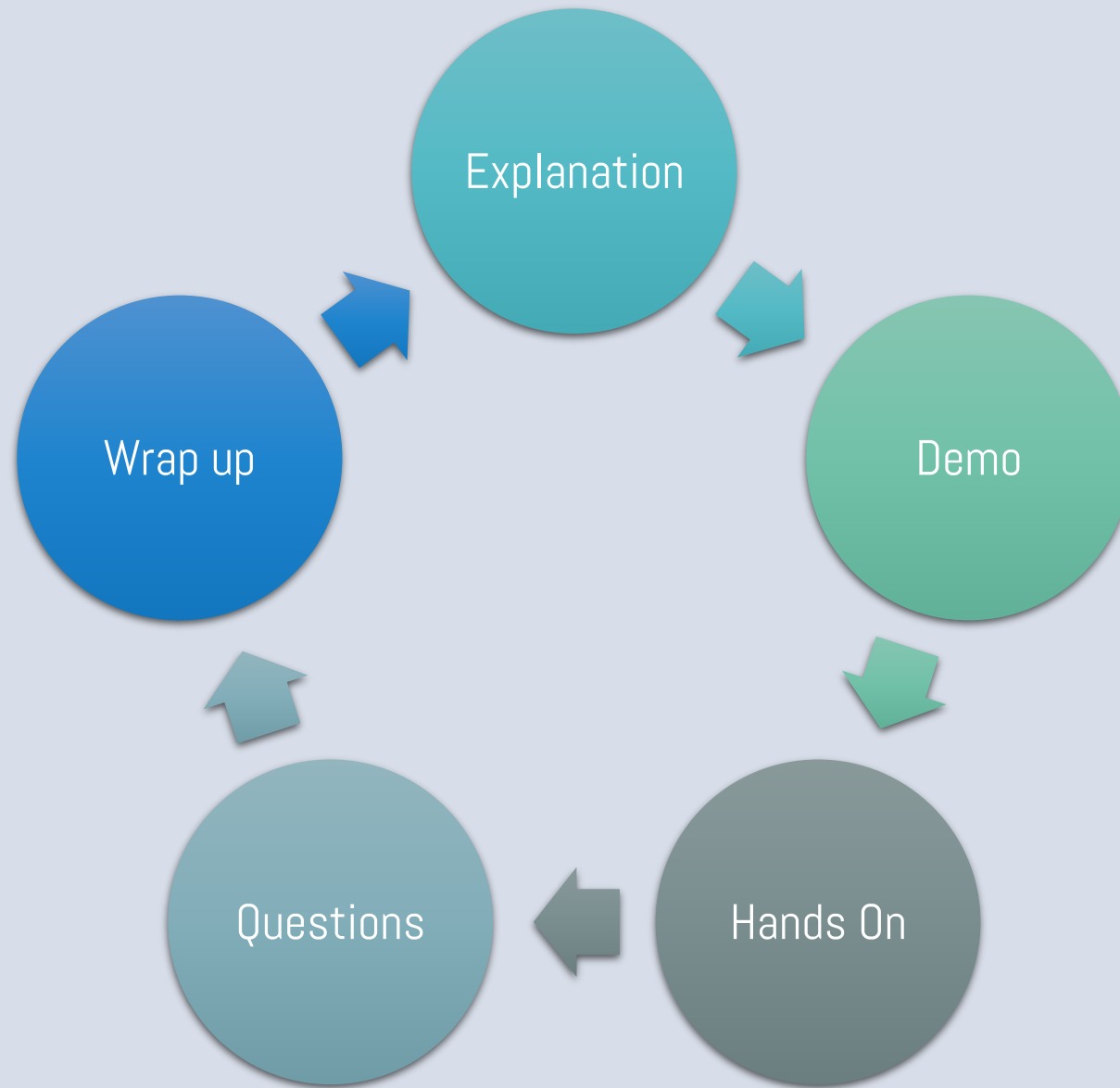
<https://www.linkedin.com/in/lauragb/>



<https://hatfullofdata.blog/>



# Training Format



# Your Role

## Learn by participation

- Hands on Exercises
- Ask Questions
- Suggest Ideas
- Work Together



# Resources and Setup

- Available on GitHub - <https://github.com/Laura-GB/PowerBIPowerPlatform>
- Download Nordic Summit Release
  - Slides
  - Solution Zip
  - Data Files



# Oldest child!



The low code platform that spans Microsoft 365, Azure, Dynamics 365, and standalone apps.



**Power BI**  
Business analytics



**Power Apps**  
App development



**Power Automate**  
Process automation



**Power Virtual Agents**  
Intelligent virtual agents



**Power Pages**  
External-facing websites



**Data connectors**



**AI Builder**



**Dataverse**

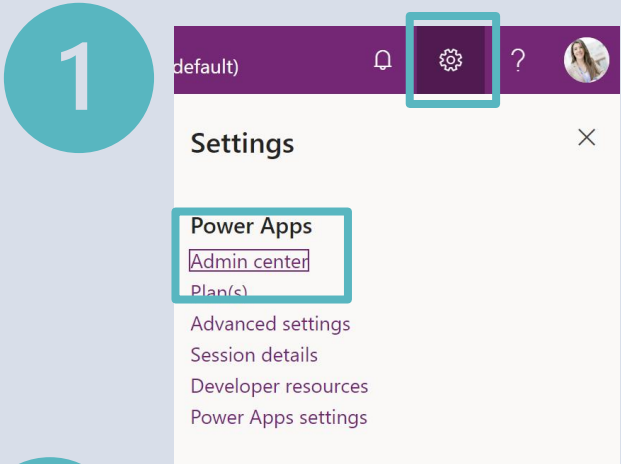
# Developer Environment Solution & Data

## 3 Set up Stages



# Create Developer Environment

1



Settings

Power Apps

Admin center

Plan(s)

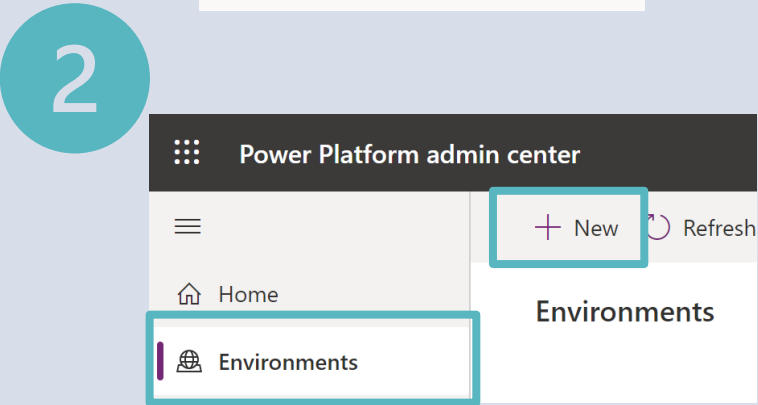
Advanced settings

Session details

Developer resources

Power Apps settings

2



Power Platform admin center

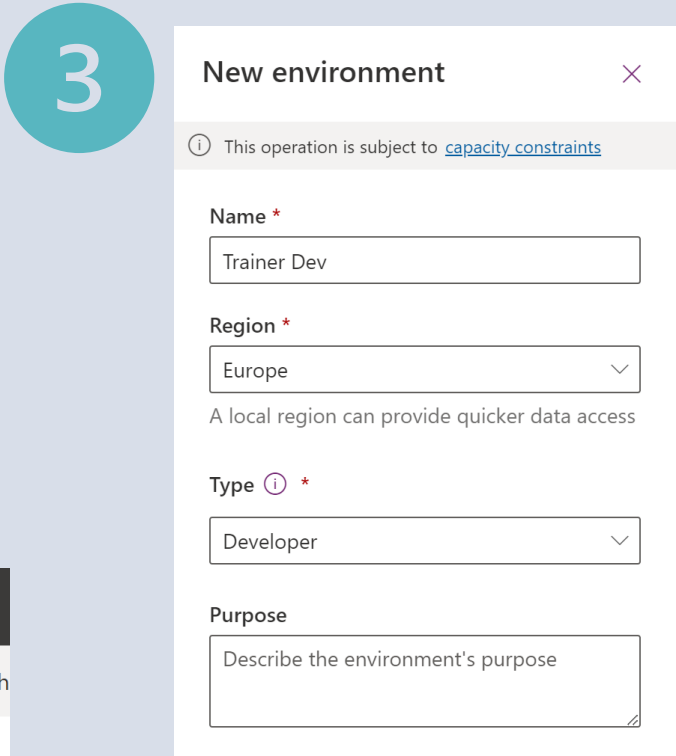
+ New Refresh

Home

Environments

Environments

3



New environment

This operation is subject to [capacity constraints](#)

Name \*

Trainer Dev

Region \*

Europe

A local region can provide quicker data access

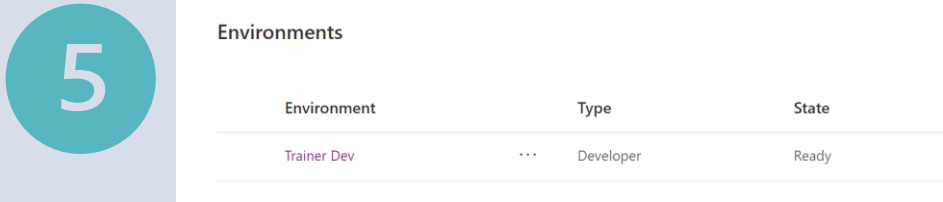
Type ⓘ \*

Developer

Purpose

Describe the environment's purpose

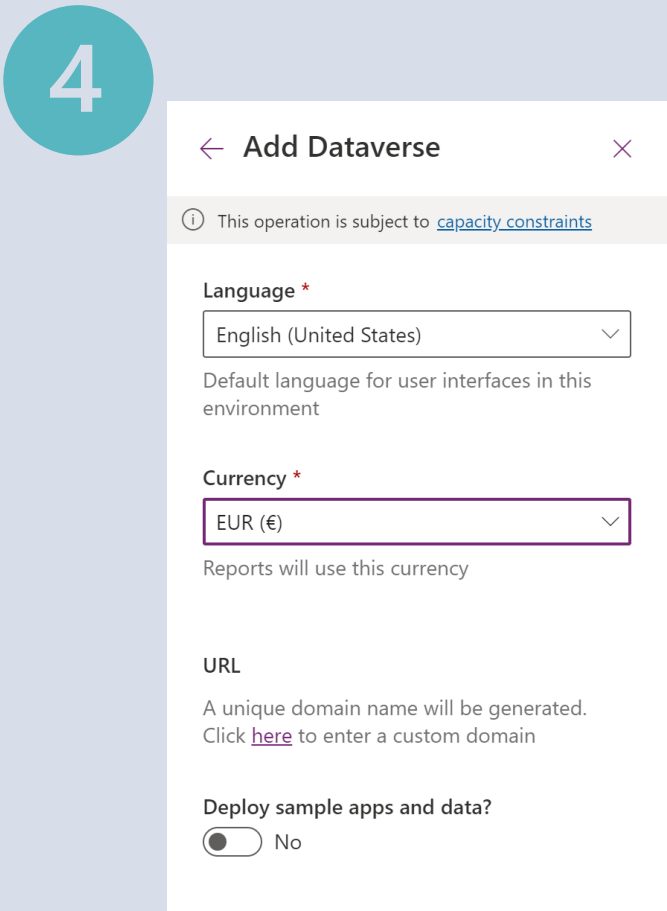
5



New environment [Trainer Dev](#) has been successfully created

Environment	Type	State
Trainer Dev	Developer	Ready

4



Add Dataverse

This operation is subject to [capacity constraints](#)

Language \*

English (United States)

Default language for user interfaces in this environment

Currency \*

EUR (€)

Reports will use this currency

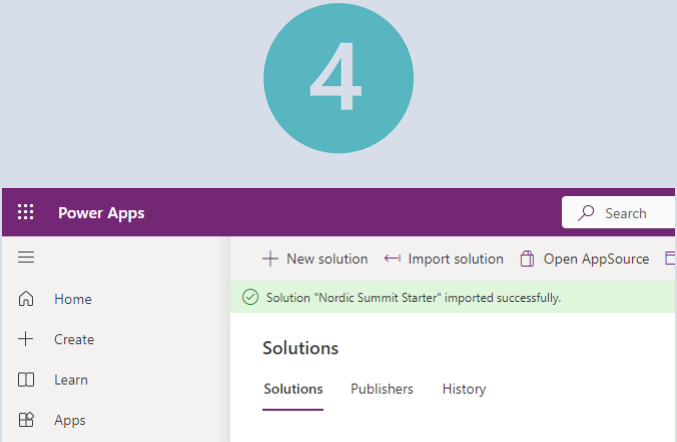
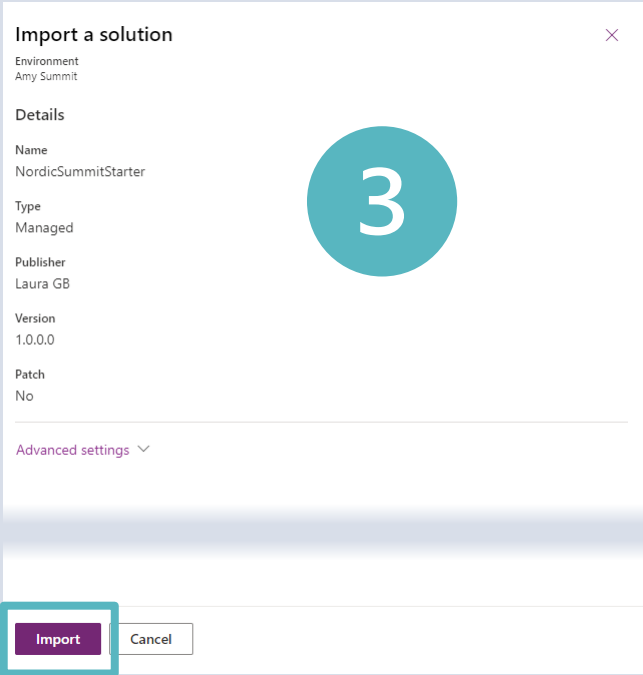
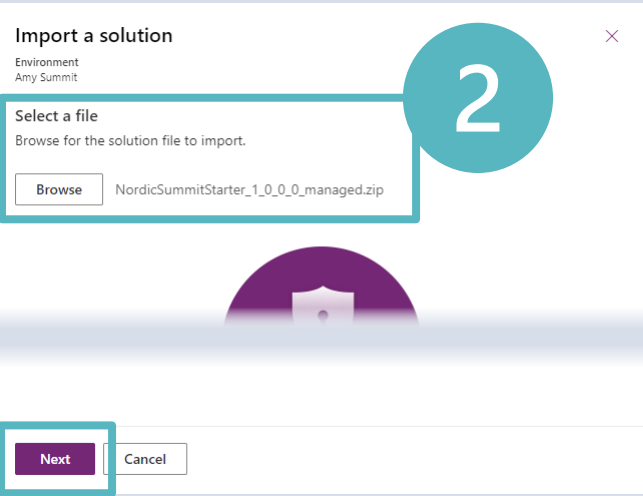
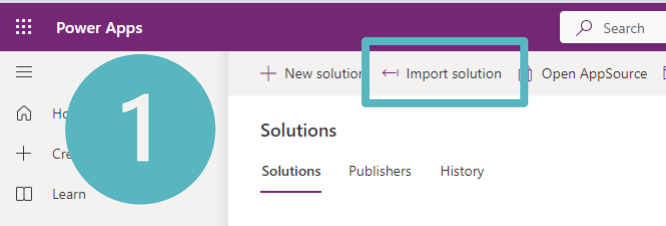
URL

A unique domain name will be generated. Click [here](#) to enter a custom domain

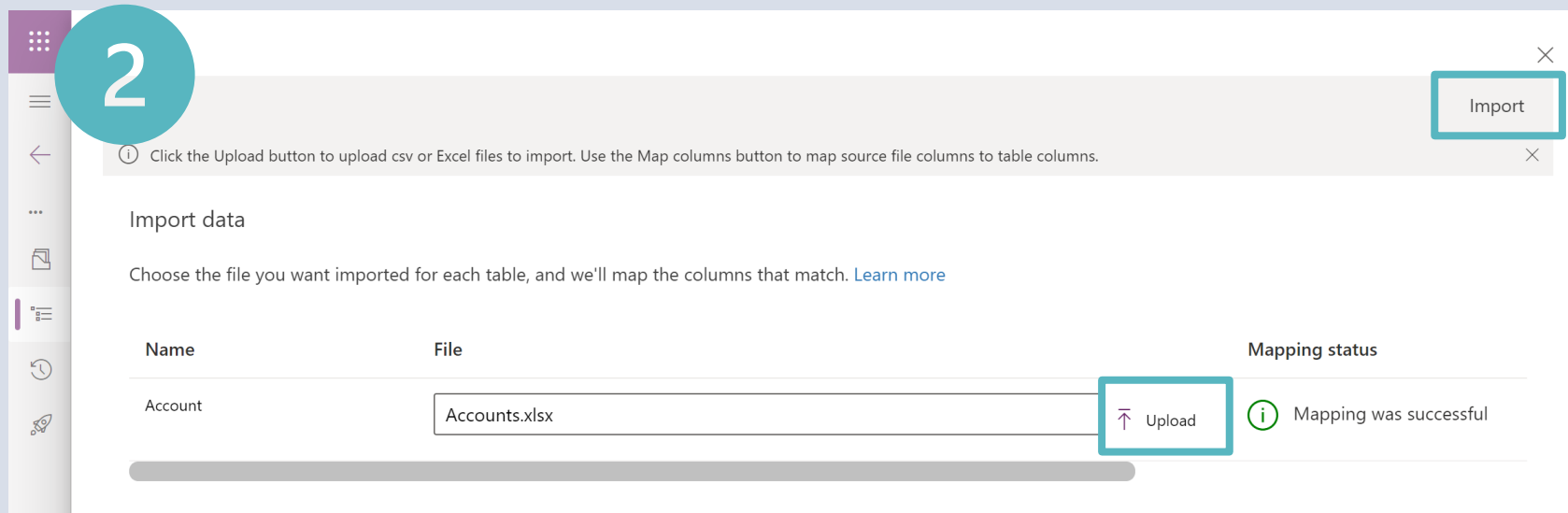
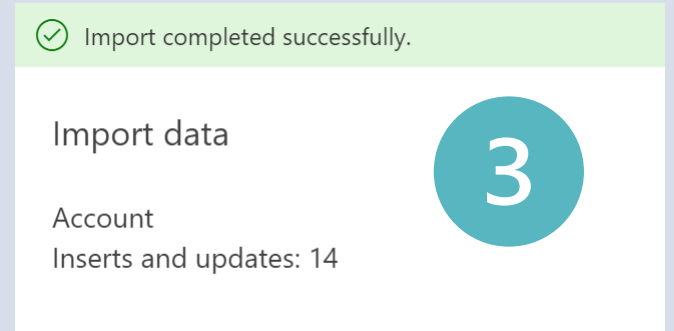
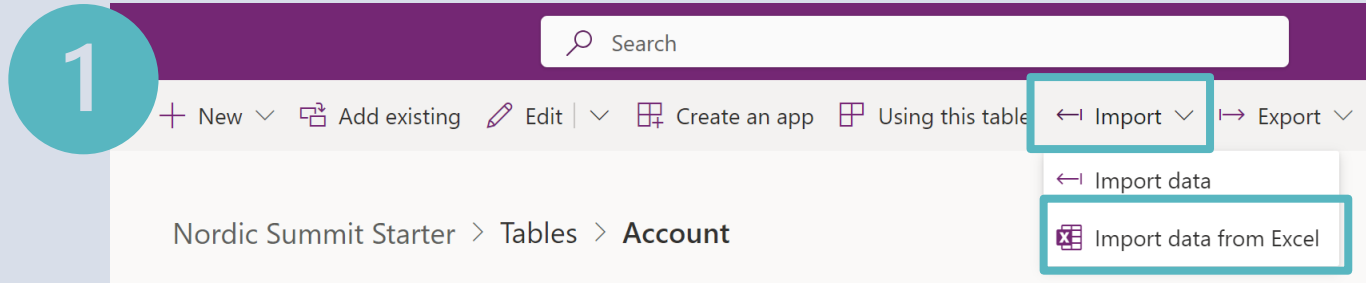
Deploy sample apps and data?

No

# Import Solution



# Import Data



## Table Order

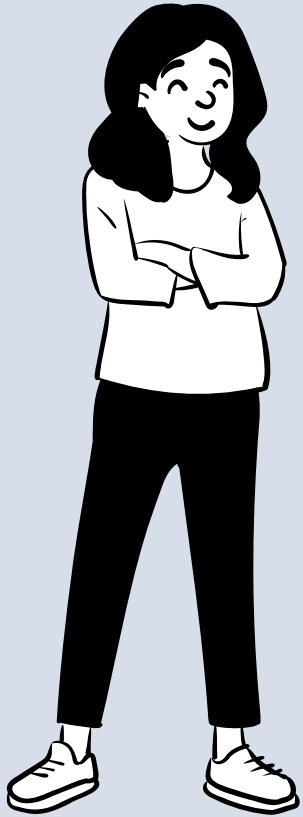
1. Account, Category, Calendar
2. Product, Drivers
3. Delivery
4. Order

# Welcome to the business!

- Supplying Fresh Fruit & Veg to businesses
- Flexible Ordering
- Regular Deliveries



# Model Driven App



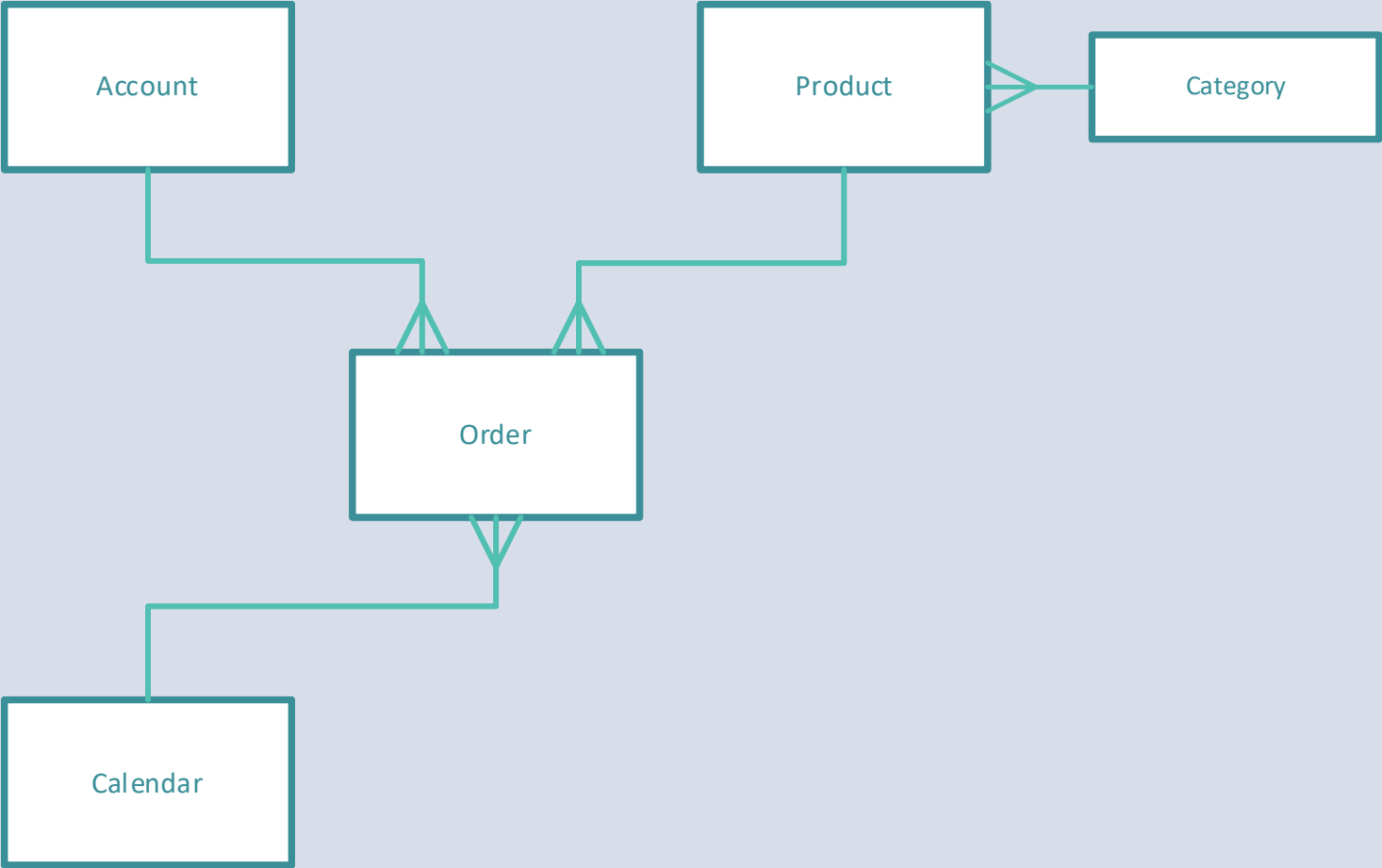
- Reporting Requirements from Alice
  - Product Sales
  - Product Growth
  - Customer Statements
  - Delivery Notes



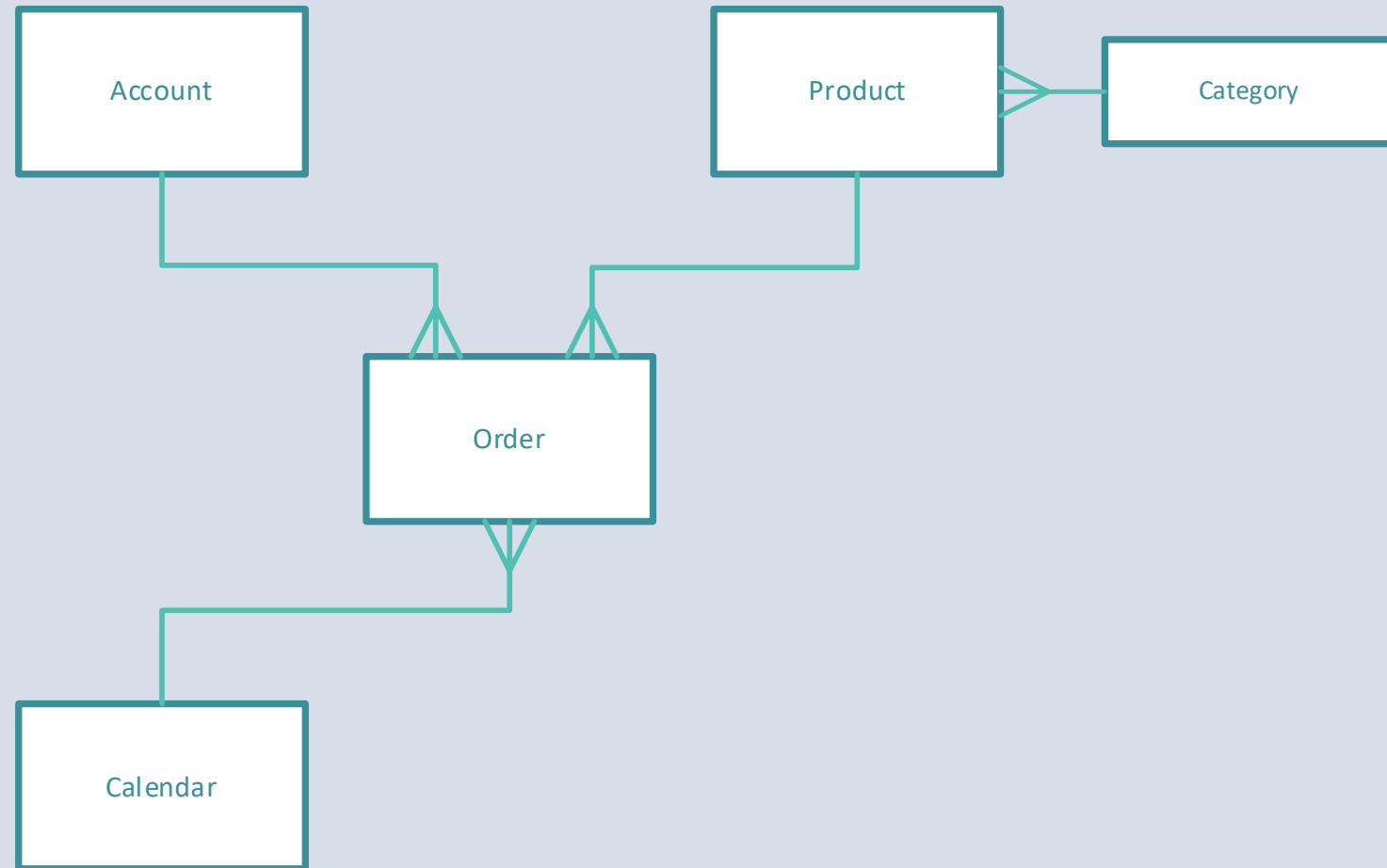
# Best Practices

The important bit

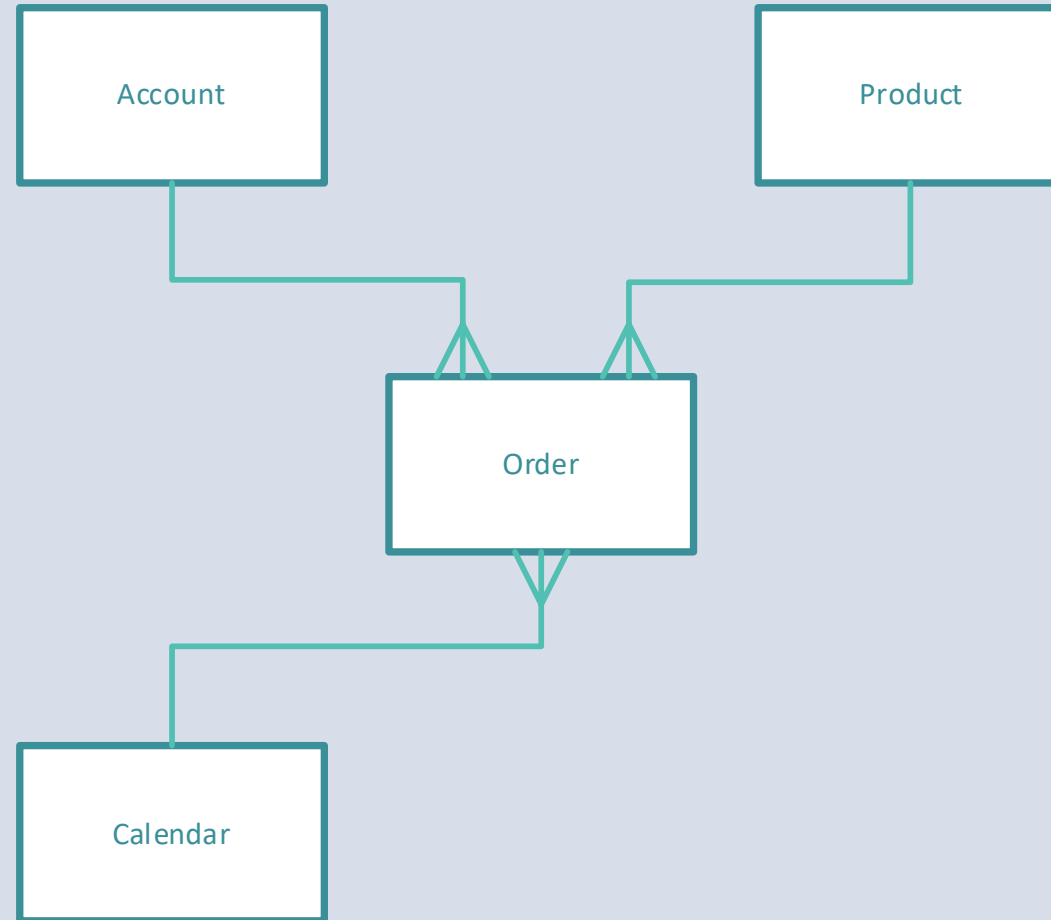
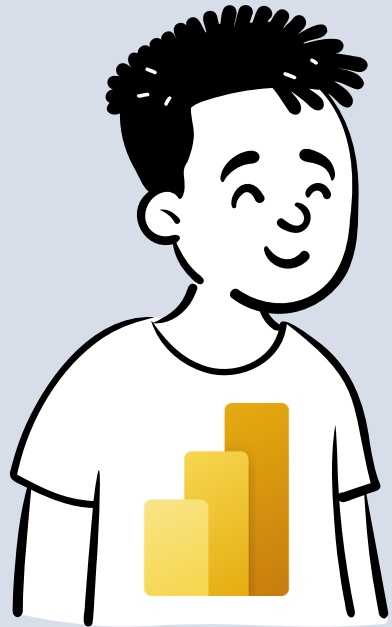
# Data Model



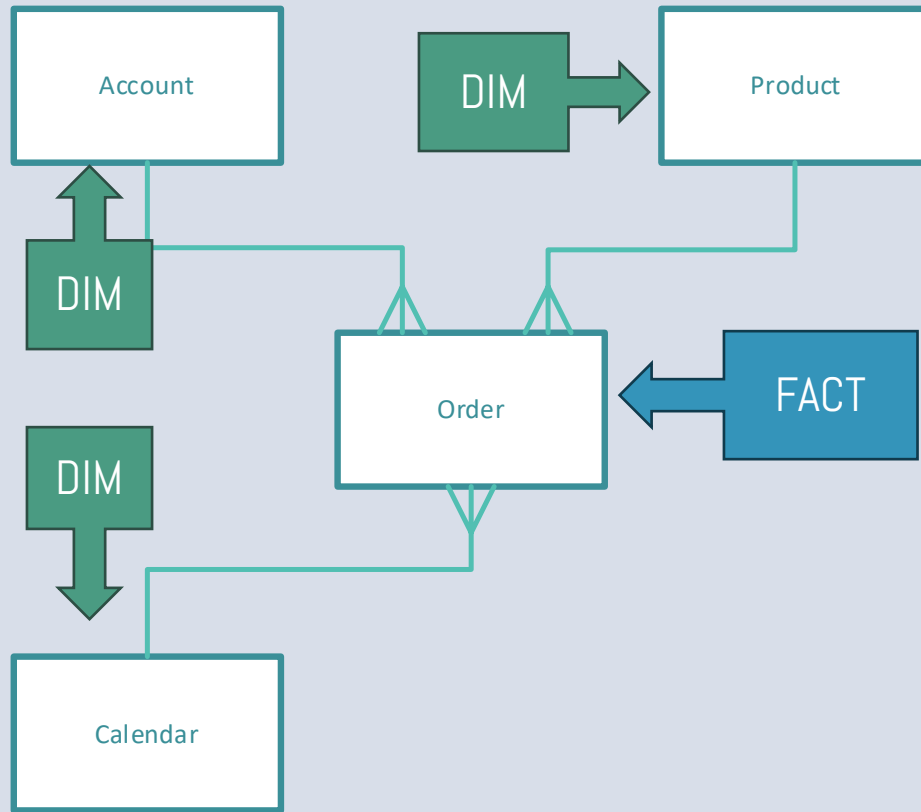
# Snowflake



# Star Schema



# Star Schema



Power BI works best when a model is a star schema

Fact table is the transactions, the numbers

Dimension (Dim) is the describers

One Fact table has Dimension tables only one layer deep

# Model Performance



Dataverse Tables  
have 100+ columns

Dataverse  
relationships are  
everywhere!

Internal names are  
unreadable



## Power Query Fixes

Select Columns  
Rename Columns\*  
Filter Data  
Data Types



Power BI wants a  
small model

Power BI wants a  
Star Schema

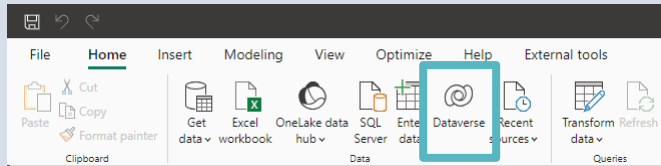
# Agenda

Create Reports from Dataverse to use in a Solution

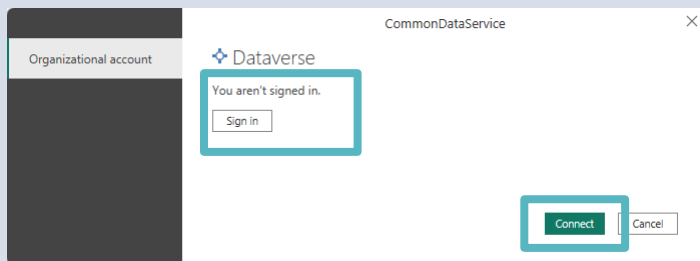


# Connect to Dataverse

1

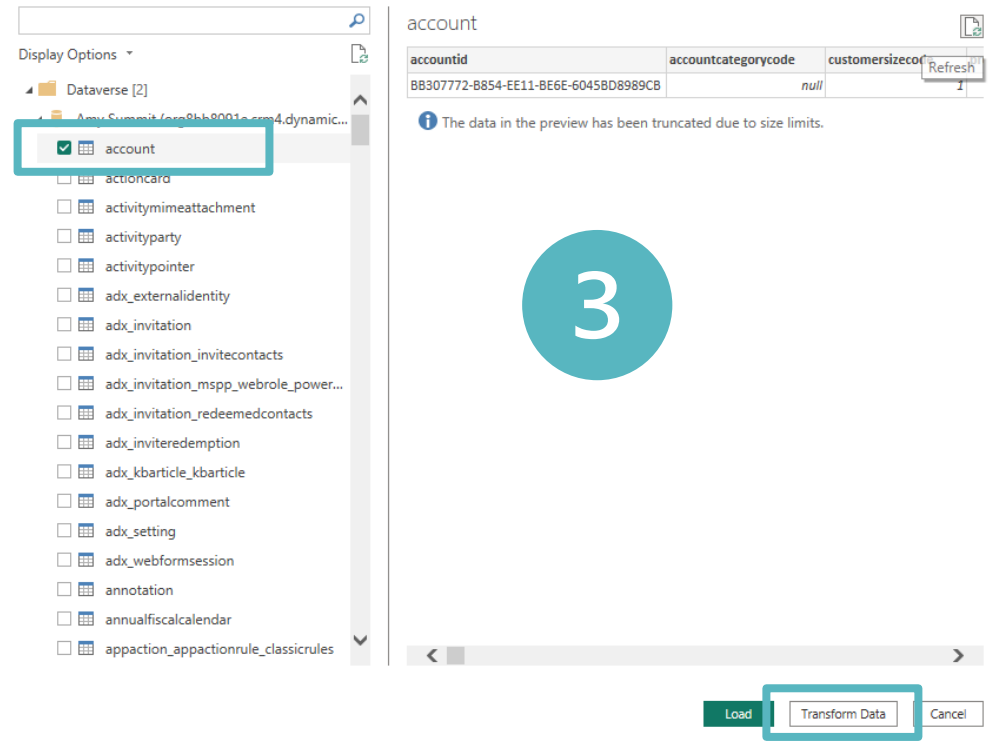


2



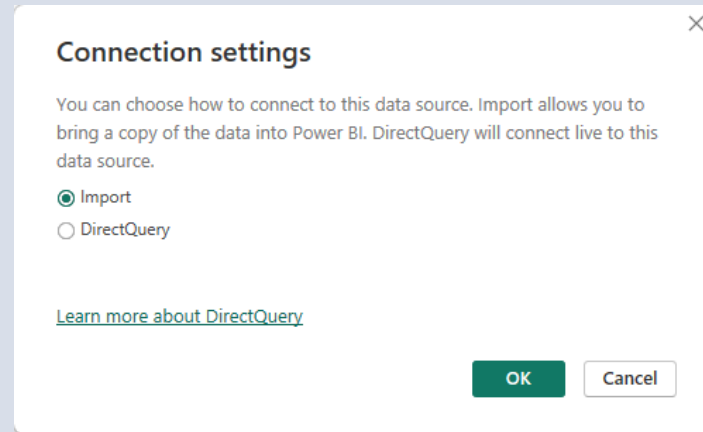
Only needed once

## Navigator





# Import Vs Direct Query



## Import

- Flexible query – more forgiving model
- Fast Response Visuals
- Needs Refreshes
- Report Owner's Security

## Direct Query

- Query must fold
- Slower response Visuals
- Almost real time reporting – no refresh
- Report Viewer's Security

# The joys of Power Query

The screenshot shows the Power Query Editor window. The ribbon at the top includes tabs for File, Home, Transform, Add Column, View, Tools, and Help. The 'Transform' tab is active, showing options like 'Show whitespace' and 'Column quality'. The 'Queries' pane on the left lists 'account', 'lgb\_order', 'lgb\_product', and 'lgb\_calendar'. The main area displays a data preview for the 'account' query, showing columns like 'accountid', 'accountcategorycode', 'customersizecode', and 'preferredcontactmethodcode'. The 'Query Settings' pane on the right shows the 'Name' as 'account' and the 'Applied Steps' as 'Source' and 'Navigation'. Annotations with arrows point to the 'Ribbon', 'Query Name', 'Query Steps', and 'Query Data up to 1000 rows'.

Queries [4]

- account
- lgb\_order
- lgb\_product
- lgb\_calendar

Query Data up to 1000 rows

Query Name

Query Steps

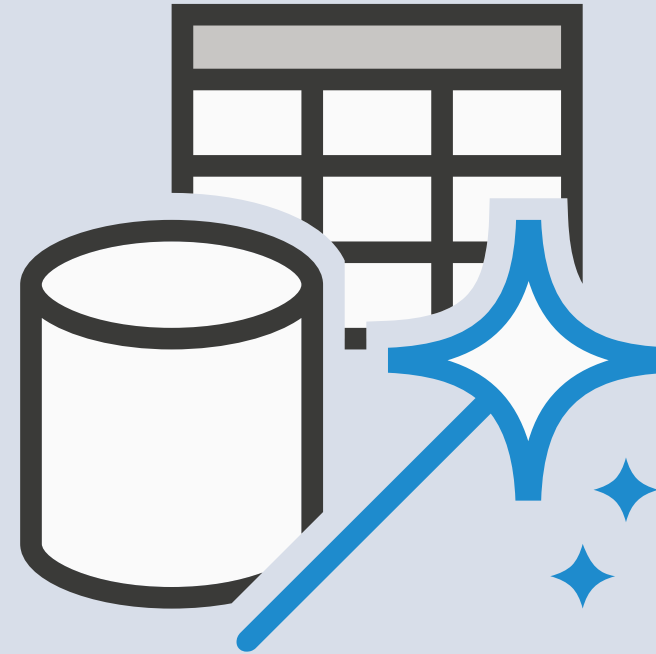
Ribbon

	accountid	accountcategorycode	customersizecode	preferredcontactmethodcode	customerid
1	BB307772-B854-EE11-BE6E-6045BD898...	null	1	1	
2	BC307772-B854-EE11-BE6E-6045BD8989...	null	1	1	
3	BD307772-B854-EE11-BE6E-6045BD898...	null	1	1	
4	BE307772-B854-EE11-BE6E-6045BD8989...	null	1	1	
5	BF307772-B854-EE11-BE6E-6045BD8989...	null	1	1	
6	C0307772-B854-EE11-BE6E-6045BD8989...	null	1	1	
7	C1307772-B854-EE11-BE6E-6045BD8989...	null	1	1	
8	C2307772-B854-EE11-BE6E-6045BD8989...	null	1	1	
9	C3307772-B854-EE11-BE6E-6045BD8989...	null	1	1	
10	C4307772-B854-EE11-BE6E-6045BD8989...	null	1	1	
11	C5307772-B854-EE11-BE6E-6045BD8989...	null	1	1	
12	C6307772-B854-EE11-BE6E-6045BD8989...	null	1	1	
13	C7307772-B854-EE11-BE6E-6045BD8989...	null	1	1	
14	C8307772-B854-EE11-BE6E-6045BD8989...	null	1	1	

261 COLUMNS, 14 ROWS Column profiling based on top 1000 rows PREVIEW DOWNLOADED AT 18:47

# The power of Power Query

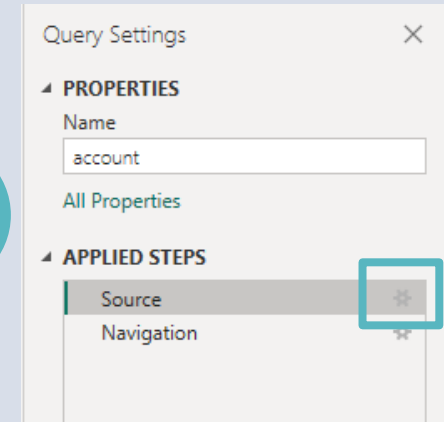
- Select Columns
- Filter Data
- Change Data Types
- Calculate Columns



# Relationship Columns

mina...	account(accountid)	account(accountid) 2	account(accountid) 3	account(master
null	Table	Table	Table	Value
null	Table	Table	Table	Value
null	Table	Table	Table	Value
null	Table	Table	Table	Value
null	Table	Table	Table	Value
null	Table	Table	Table	Value
null	Table	Table	Table	Value
null	Table	Table	Table	Value
null	Table	Table	Table	Value
null	Table	Table	Table	Value
null	Table	Table	Table	Value
null	Table	Table	Table	Value
null	Table	Table	Table	Value
null	Table	Table	Table	Value
null	Table	Table	Table	Value
null	Table	Table	Table	Value

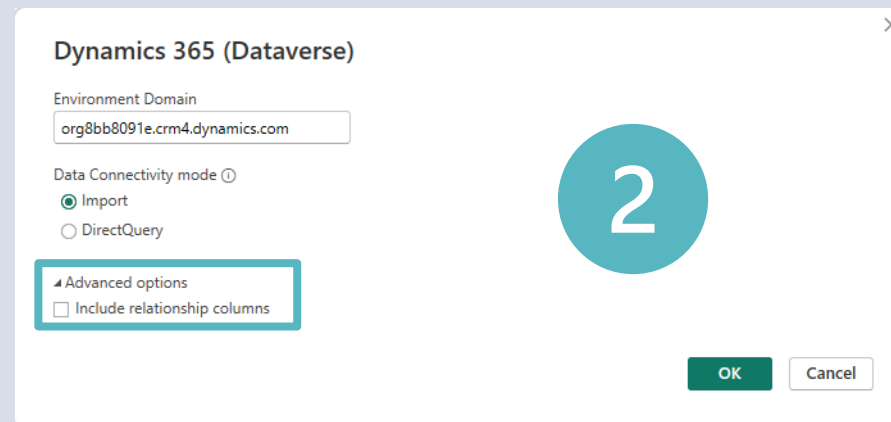
1



Relationship columns are included by default.

Removing them improves performance

2



# Filter Inactive Records

Inactive Accounts ▾

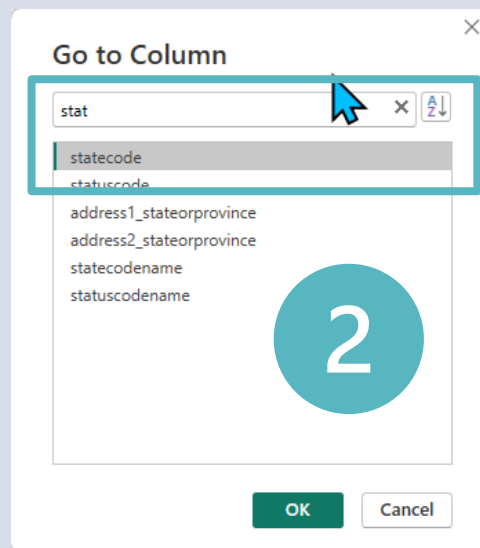
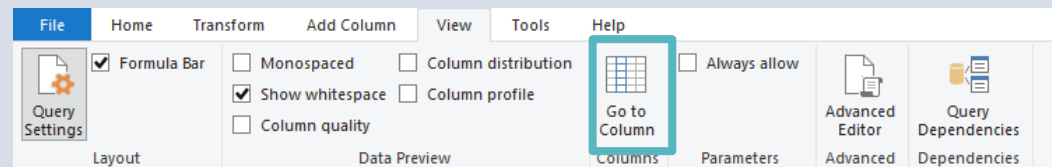
☐ Account Name ↑ ▾

☐ [Marfleet Catering](#)

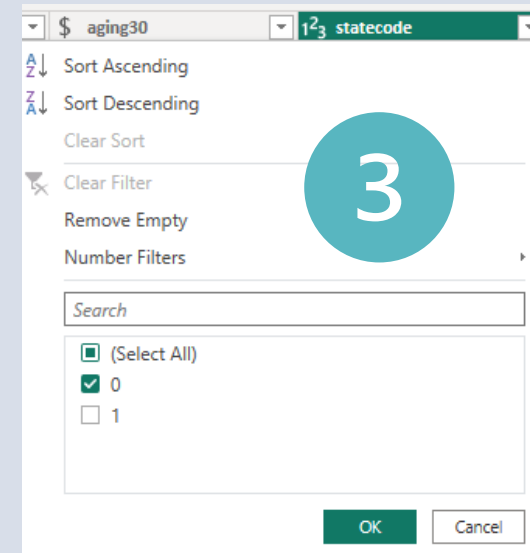
fx = Table.SelectColumns(dbo\_account, {"accountid", "name", "statecode", "industrycodename", "statecodename"})

	accountid	name	statecode	industrycodename	statecodename
1	A0392FF6-D254-EE11-BE6E-6045BD8989...	Kabulonga School Catering	0	Caterer	Active
2	A1392FF6-D254-EE11-BE6E-6045BD8989...	St Mary's Retreat	0	Hotel	Active
3	A2392FF6-D254-EE11-BE6E-6045BD8989...	Manorville Mansions	0	Restaurant	Active
4	A3392FF6-D254-EE11-BE6E-6045BD8989...	Regina Hotel	0	Hotel	Active
5	A4392FF6-D254-EE11-BE6E-6045BD8989...	Northampton Hall	0	Hotel	Active
6	A5392FF6-D254-EE11-BE6E-6045BD8989...	Bell Gate Hotel	0	Hotel	Active
7	A6392FF6-D254-EE11-BE6E-6045BD8989...	Whitehall Street Supplies	0	Supplier	Active
8	A7392FF6-D254-EE11-BE6E-6045BD8989...	Hunters Oak Ranch	0	Restaurant	Active
9	A8392FF6-D254-EE11-BE6E-6045BD8989...	Henry Floyd Supplies	0	Supplier	Active
10	A9392FF6-D254-EE11-BE6E-6045BD8989...	Deerbrook Hotel	0	Hotel	Active
11	AA392FF6-D254-EE11-BE6E-6045BD8989...	Marfleet Catering	1	Caterer	Inactive
12	AB392FF6-D254-EE11-BE6E-6045BD8989...	Bashian Inn	0	Restaurant	Active
13	AC392FF6-D254-EE11-BE6E-6045BD8989...	Cherhill Grocers	0	Supplier	Active
14	AD392FF6-D254-EE11-BE6E-6045BD8989...	Claydon Caterers	0	Caterer	Active

1



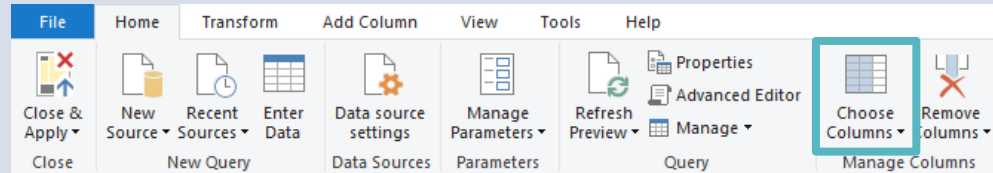
2



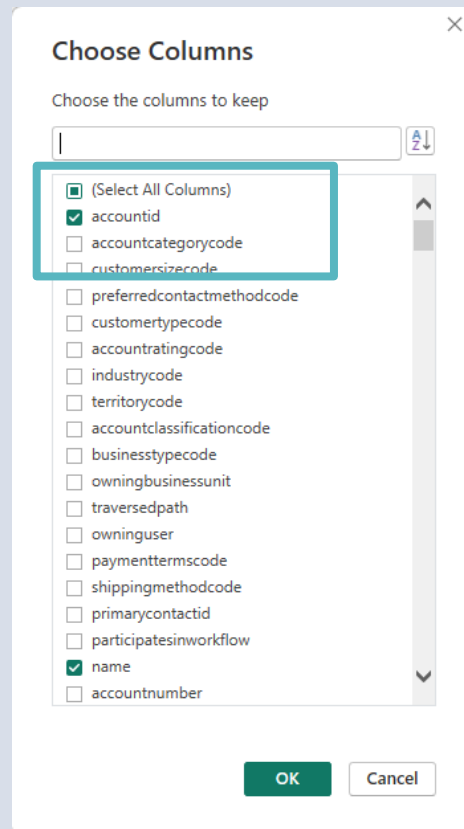
3

# Reduce Columns

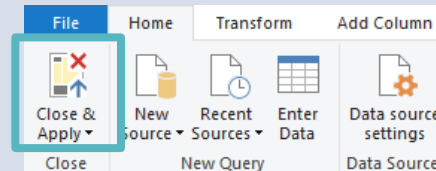
1



2



3



	accountid	accountcategorycode	customersizecode	preferredcontactmethodcode	customer
1	B8307772-B854-EE11-BE6E-60458D898...	null	1	1	
2	BC307772-B854-EE11-BE6E-60458D8989...	null	1	1	
3	BD307772-B854-EE11-BE6E-60458D898...	null	1	1	
4	BE307772-B854-EE11-BE6E-60458D8989...	null	1	1	
5	BF307772-B854-EE11-BE6E-60458D8989...	null	1	1	
6	C0307772-B854-EE11-BE6E-60458D8989...	null	1	1	
7	C1307772-B854-EE11-BE6E-60458D8989...	null	1	1	
8	C2307772-B854-EE11-BE6E-60458D8989...	null	1	1	
9	C3307772-B854-EE11-BE6E-60458D8989...	null	1	1	
10	C4307772-B854-EE11-BE6E-60458D8989...	null	1	1	
11	C5307772-B854-EE11-BE6E-60458D8989...	null	1	1	

	accountid	name	industrycode
1	B8307772-B854-EE11-BE6E-60458D898...	Bell Gate Hotel	Hotel
2	BC307772-B854-EE11-BE6E-60458D8989...	Whitehall Street Supplies	Supplier
3	BD307772-B854-EE11-BE6E-60458D898...	Regina Hotel	Hotel
4	BE307772-B854-EE11-BE6E-60458D8989...	Northampton Hall	Hotel
5	BF307772-B854-EE11-BE6E-60458D8989...	Kabulonga School Catering	Caterer
6	C0307772-B854-EE11-BE6E-60458D8989...	Hunters Oak Ranch	Restaurant
7	C1307772-B854-EE11-BE6E-60458D8989...	St Mary's Retreat	Hotel
8	C2307772-B854-EE11-BE6E-60458D8989...	Manorville Mansions	Restaurant
9	C3307772-B854-EE11-BE6E-60458D8989...	Bearbrook Hotel	Hotel
10	C4307772-B854-EE11-BE6E-60458D8989...	Barbican Inn	Restaurant
11	C5307772-B854-EE11-BE6E-60458D8989...	Henry Floyd Supplies	Supplier

Account	Account Name	Industry
B8307772-B854-EE11-BE6E-60458D8989CB	Bell Gate Hotel	Hotel
BC307772-B854-EE11-BE6E-60458D8989CB	Whitehall Street Supplies	Supplier
BD307772-B854-EE11-BE6E-60458D8989CB	Regina Hotel	Hotel
BE307772-B854-EE11-BE6E-60458D8989CB	Northampton Hall	Hotel
BF307772-B854-EE11-BE6E-60458D8989CB	Kabulonga School Catering	Caterer
C0307772-B854-EE11-BE6E-60458D8989CB	Hunters Oak Ranch	Restaurant
C1307772-B854-EE11-BE6E-60458D8989CB	St Mary's Retreat	Hotel
C2307772-B854-EE11-BE6E-60458D8989CB	Manorville Mansions	Restaurant
C3307772-B854-EE11-BE6E-60458D8989CB	Bearbrook Hotel	Hotel
C4307772-B854-EE11-BE6E-60458D8989CB	Barbican Inn	Restaurant
C5307772-B854-EE11-BE6E-60458D8989CB	Henry Floyd Supplies	Supplier

# Column Data Types

modifiedon
18/09/2023 20:10:35
18/09/2023 20:10:35
18/09/2023 20:10:35
18/09/2023 20:10:35
18/09/2023 20:10:36
18/09/2023 20:10:36
18/09/2023 20:10:36

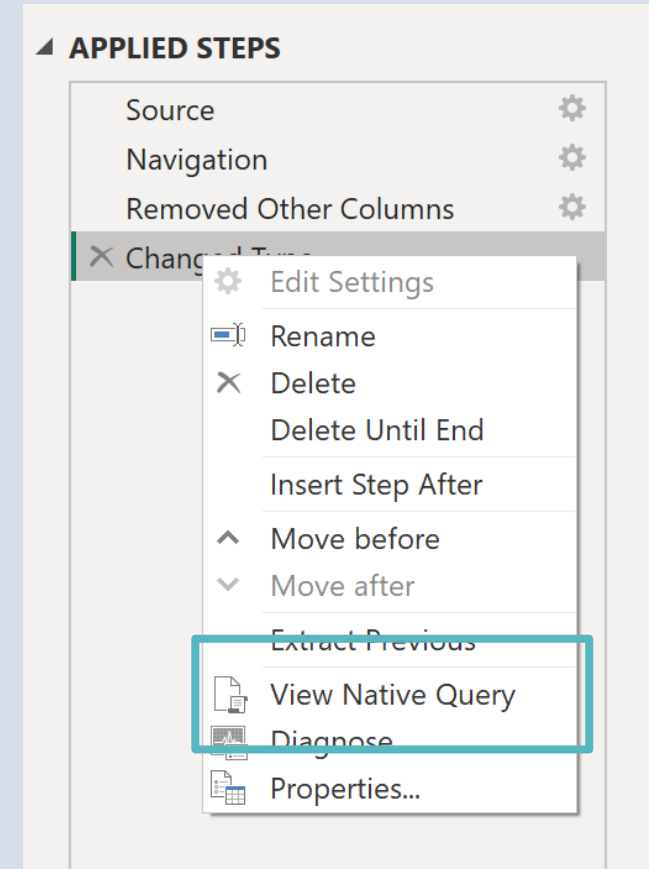
modifiedon	AB
1.2	Decimal Number
\$	Fixed decimal number
1 <sup>2</sup> <sub>3</sub>	Whole Number
%	Percentage
	Date/Time
	Date
	Time
	Date/Time/Timezone
	Duration
AB <sub>C</sub>	Text
	True/False
	Binary
	Using Locale...

modifiedon
18/09/2023
18/09/2023
18/09/2023
18/09/2023
18/09/2023
18/09/2023
18/09/2023

Confirm all data types  
Do you need the time?  
ABC / 123 is not a valid data type

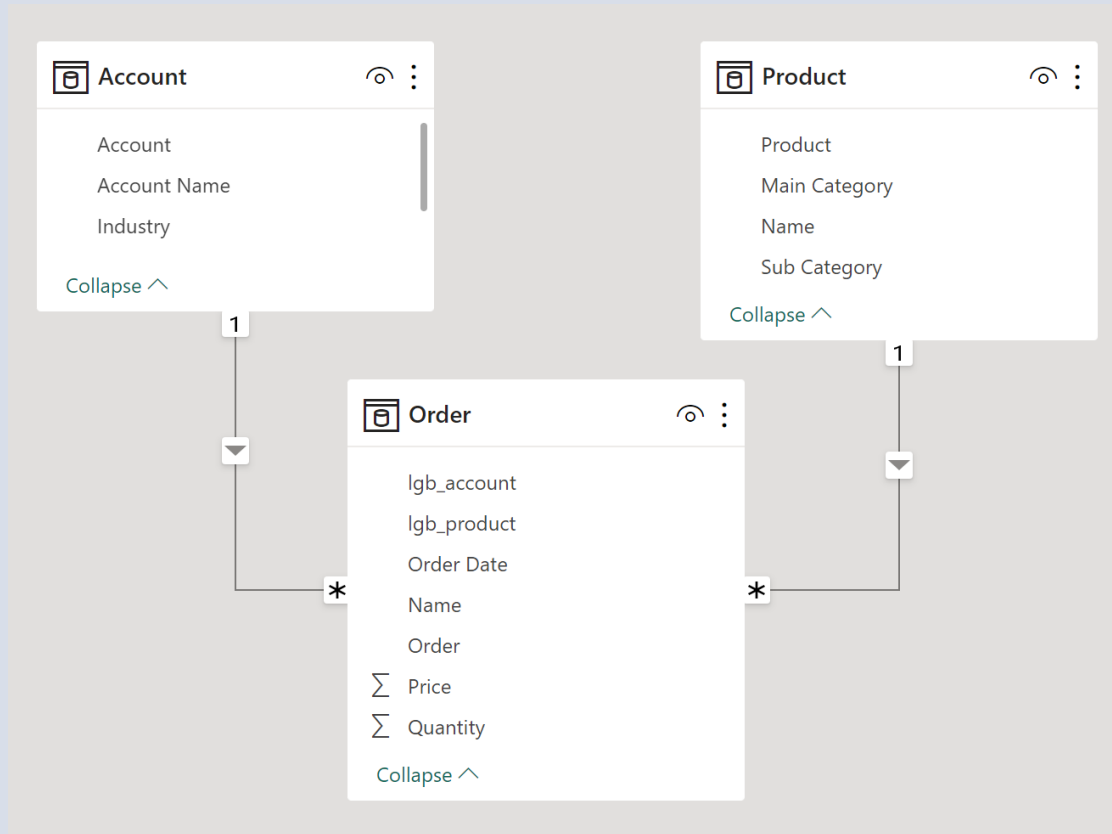
# Query Folding

- Fold the query back to the source
- Speeds up refresh
- Must be kept for direct query reports
- Right click on the step
  - View Native Query available = Kept
  - View Native Query greyed out = Broken





# Relationships



- Keep it simple
- One active relationship between 2 tables
- One dimension record links to many fact records
- **Star Schema**

# What is DAX

DAX Function

Total Volume = SUM( 'Order'[Quantity] )

Measure or  
Column Name

Table Name

Column Name

# Calculated Columns vs Measures

## Calculated Column

- Calculated for every table when report is opened
- Values are not affected by filters and slicers

1 Month Offset = DATEDIFF( TODAY(), 'calendar'[Date], MONTH )

Name	Date	Year	Month	Month Num	Month Year	Month Offset
02 January 2022	02/01/2022 00:00:00	2022	January	1	Jan 2022	-20
03 January 2022	03/01/2022 00:00:00	2022	January	1	Jan 2022	-20
04 January 2022	04/01/2022 00:00:00	2022	January	1	Jan 2022	-20
05 January 2022	05/01/2022 00:00:00	2022	January	1	Jan 2022	-20
06 January 2022	06/01/2022 00:00:00	2022	January	1	Jan 2022	-20
07 January 2022	07/01/2022 00:00:00	2022	January	1	Jan 2022	-20
08 January 2022	08/01/2022 00:00:00	2022	January	1	Jan 2022	-20
09 January 2022	09/01/2022 00:00:00	2022	January	1	Jan 2022	-20

## Measure

- Calculated when a page is calculated
- Values change as filters and slicers change

Year: 2022

Main Category	Sub Category	Total Volume
Fruit	Citrus	3,451
Fruit	Hard Fruit	3,083
Fruit	Soft Fruit	4,229
Vegetable	Greens	2,085
Vegetable	Root	8,273
Vegetable	Salad	7,416
<b>Total</b>		<b>28,537</b>

Year: 2023

Main Category	Sub Category	Total Volume
Fruit	Citrus	3,946
Fruit	Hard Fruit	3,541
Fruit	Soft Fruit	5,480
Vegetable	Greens	2,054
Vegetable	Root	8,995
Vegetable	Salad	9,406
<b>Total</b>		<b>33,422</b>

# What is Context

## Row Context

- Single table row which an expression is evaluated
- Used in Calculated Columns
- Used in Iterator functions

## Filter Context

- Filtered dataset which an expression is evaluated
- Used in measures in visuals
- Reacts to filter changes

# First Visuals

Main Category	Sub Category	Total Volume
Fruit	Citrus	3,946
Fruit	Hard Fruit	3,541
Fruit	Soft Fruit	5,480
Vegetable	Greens	2,054
Vegetable	Root	8,995
Vegetable	Salad	9,406
<b>Total</b>		<b>33,422</b>

Table

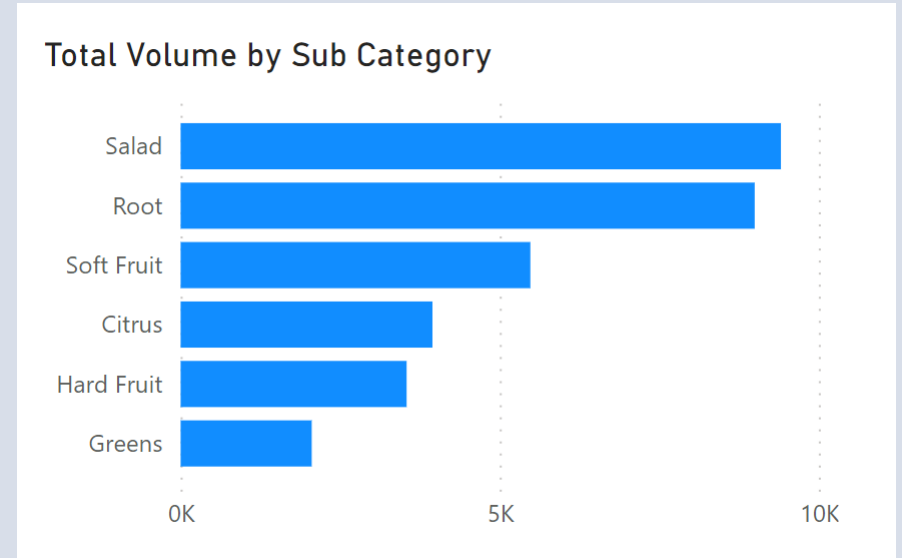


Card

Year

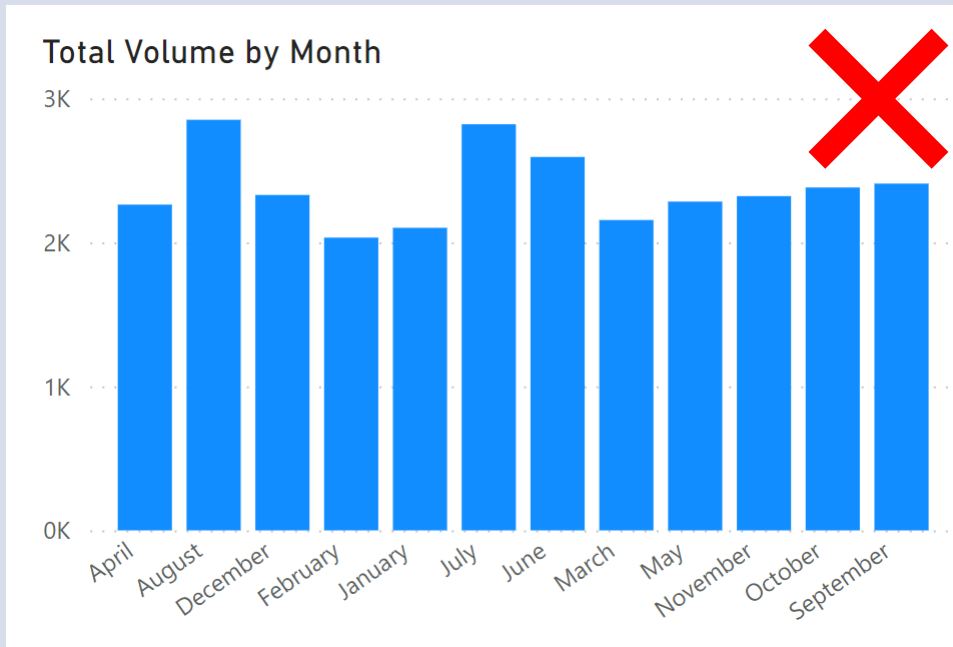
2023

Slicer

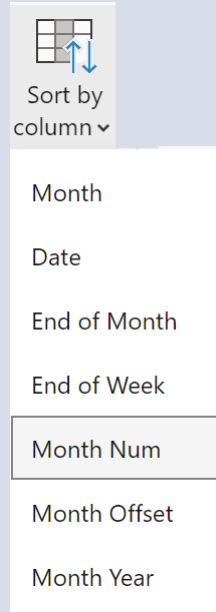


Charts

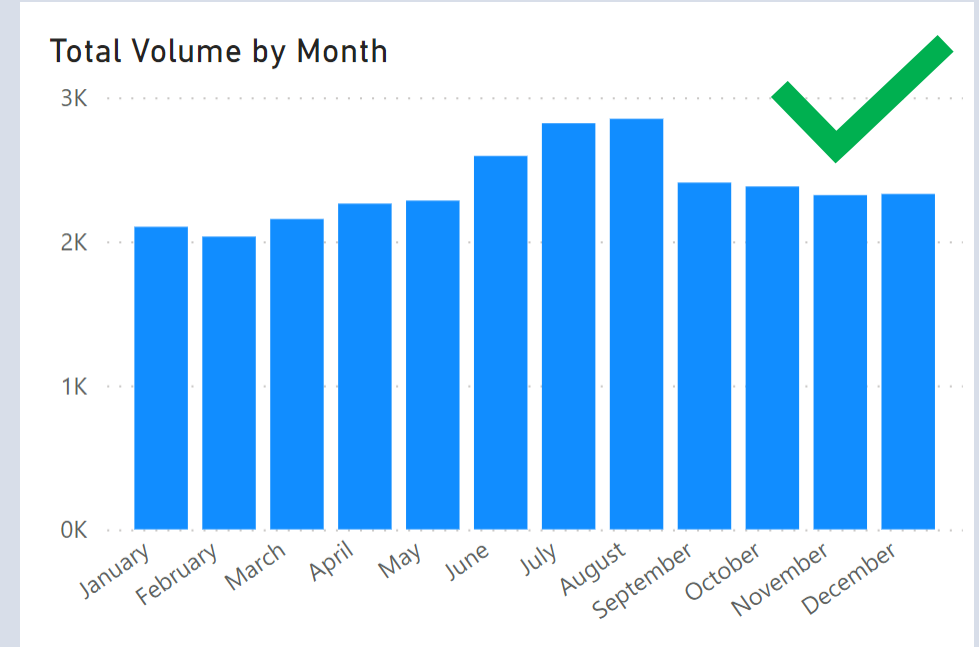
# Calendar Table - Sorting



Months sorted alphabetically



In the Calendar table  
change the sort of  
the Month column



Months sorted correctly

# Using Calendar Offset Columns

1



```
1 Month Offset = DATEDIFF( TODAY() , 'calendar'[Date] , MONTH )
```

Add a calculated column to the Calendar table

2

**Month Offset**  
is less than 0 and is gr...

Filter type ⓘ  
Advanced filtering ▾

Show items when the value  
is less than ▾

0

☒ And ☐ Or

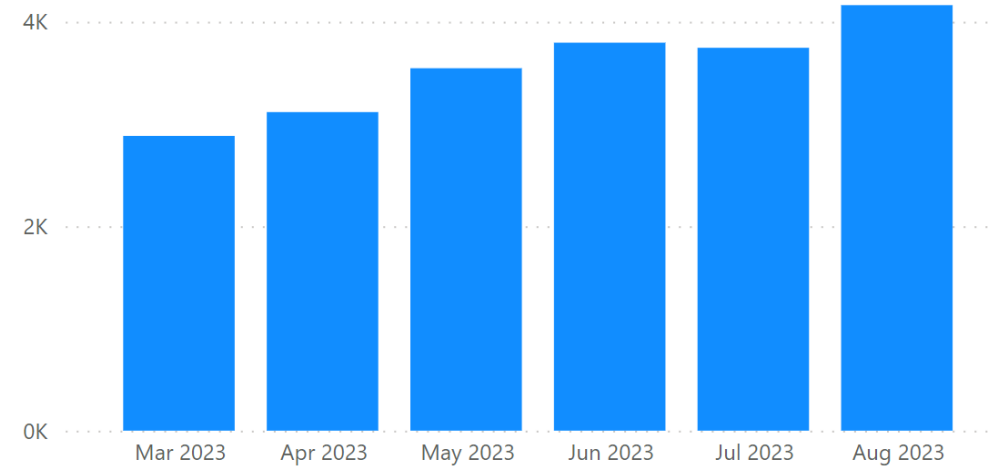
is greater than or equal to ▾

-6

Apply filter

Add a filter to  
a visual

Total Volume by Month Year



# Filtered Measures

```
Fruit Sales =  
    CALCULATE(  
        [Total Sales] ,  
        'Product'[Main Category] = "Fruit"  
    )
```

Total Sales

£118.62K

Fruit Sales

£53.12K

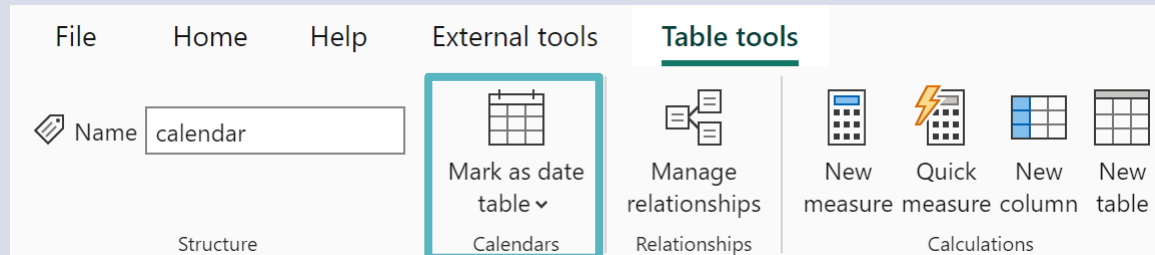


# Iterative Measures

Aggregate a function on every row of a dataset

```
Total Sales =  
    SUMX(  
        'Order',  
        'Order'[Quantity] * 'Order'[Price]  
    )
```

# Time Intelligence Measures



```
Total Sales LY =  
    CALCULATE(  
        [Total Sales] ,  
        SAMEPERIODLASTYEAR( 'calendar'[Date] )  
    )
```

# Longer Measures

Sales % =

```
// Calculate the totals for the years
```

```
VAR YearTotal =
```

```
    CALCULATE(
```

```
        [Total Sales] ,
```

```
        ALLSELECTED() ,
```

```
        VALUES( 'calendar'[Year] )
```

```
    )
```

```
// Calculate % of year total
```

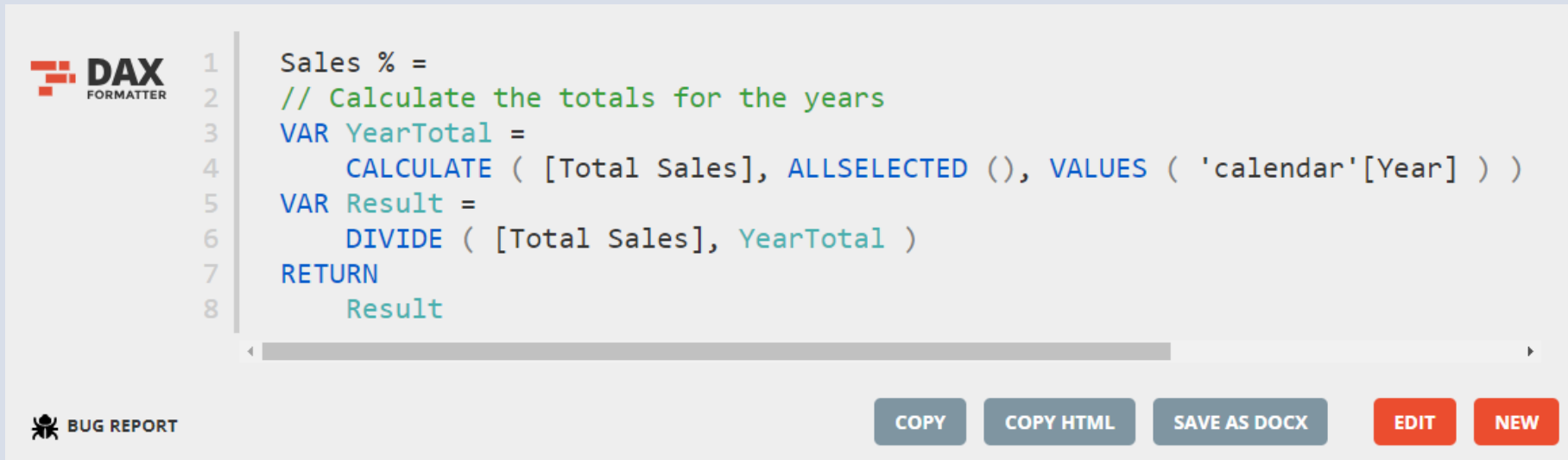
```
VAR Result =
```

```
    DIVIDE( [Total Sales], YearTotal )
```

```
Return Result
```

Month	2022	2023	Total
January	6.95%	7.69%	<b>7.35%</b>
February	6.77%	7.68%	<b>7.26%</b>
March	7.40%	8.09%	<b>7.78%</b>
April	8.16%	9.41%	<b>8.84%</b>
May	8.50%	10.89%	<b>9.80%</b>
June	9.55%	11.61%	<b>10.67%</b>
July	10.44%	11.76%	<b>11.16%</b>
August	10.45%	13.05%	<b>11.86%</b>
September	8.41%	9.84%	<b>9.19%</b>
October	8.21%	9.97%	<b>9.16%</b>
November	7.64%		<b>3.49%</b>
December	7.52%		<b>3.44%</b>
Total	100.00%	100.00%	100.00%

# DAX Formatter



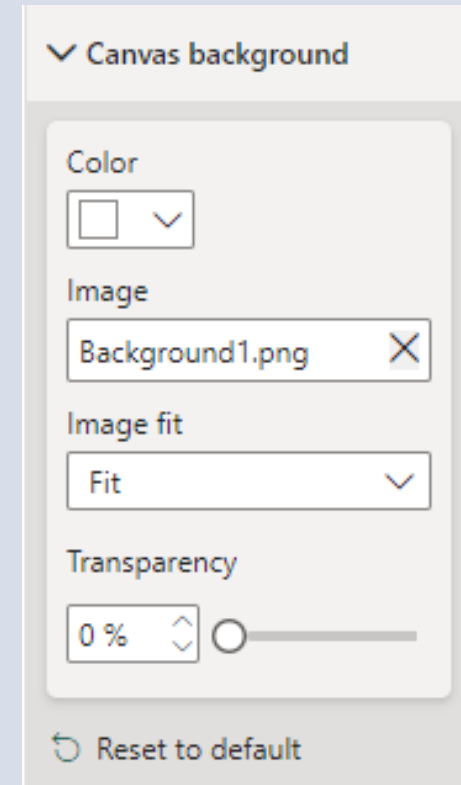
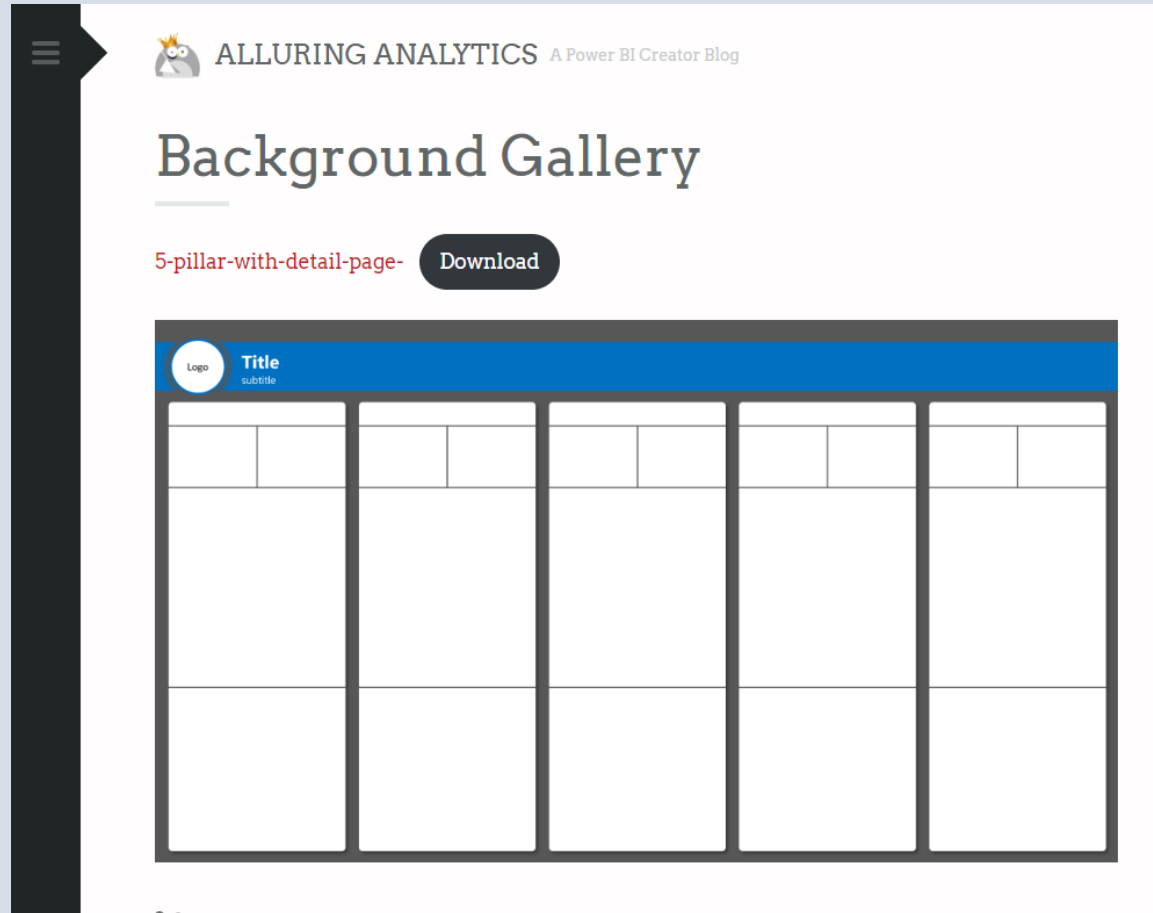
The screenshot shows the DAX Formatter web application. On the left, there is a logo with the text "DAX FORMATTER". To the right of the logo is a code editor with line numbers 1 through 8. The code is as follows:

```
1 Sales % =  
2 // Calculate the totals for the years  
3 VAR YearTotal =  
4     CALCULATE ( [Total Sales], ALLSELECTED (), VALUES ( 'calendar'[Year] ) )  
5 VAR Result =  
6     DIVIDE ( [Total Sales], YearTotal )  
7 RETURN  
8     Result
```

Below the code editor is a horizontal scrollbar. At the bottom left, there is a "BUG REPORT" link with a bug icon. At the bottom right, there are five buttons: "COPY", "COPY HTML", "SAVE AS DOCX", "EDIT", and "NEW".

<https://www.daxformatter.com/>

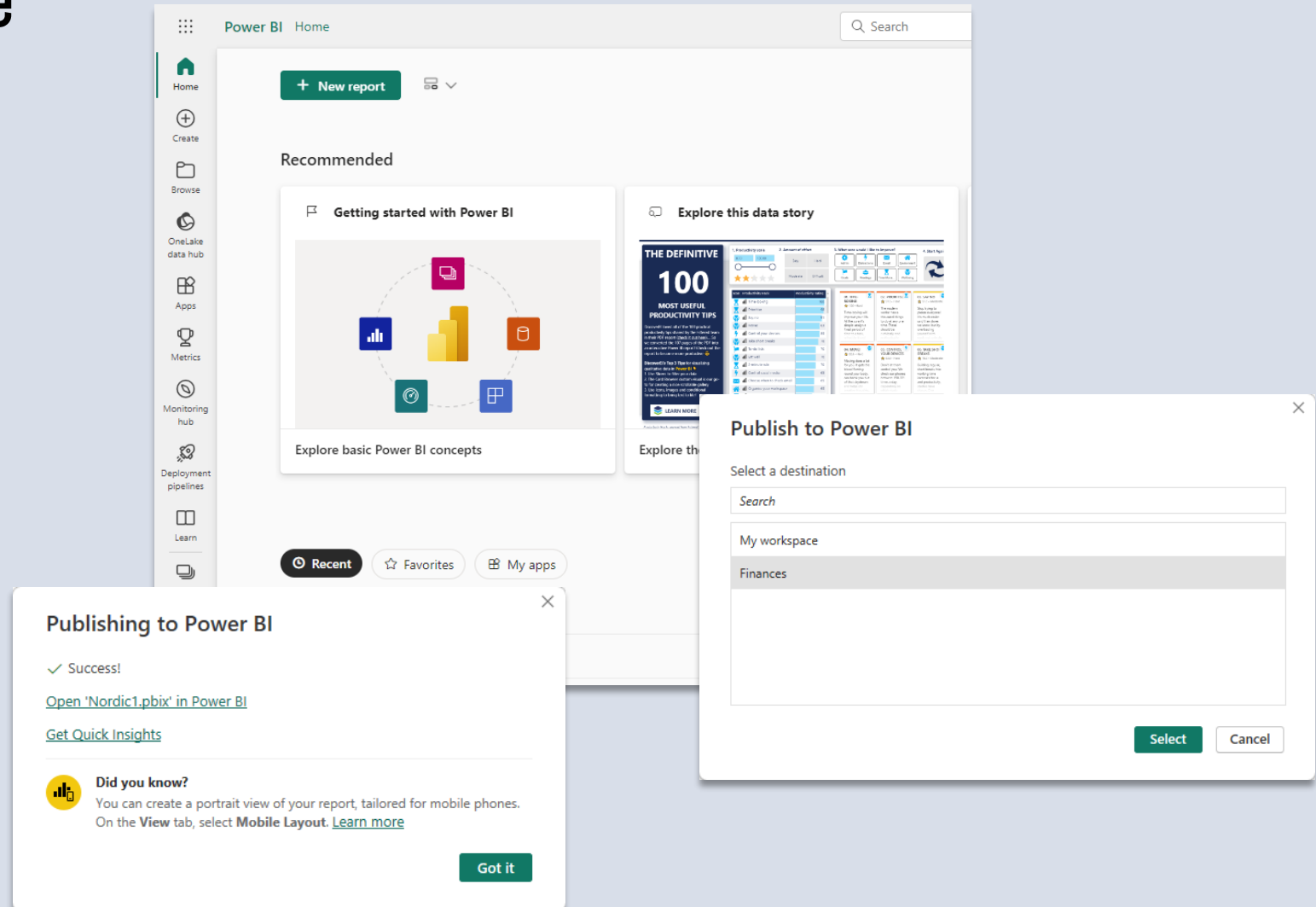
# Easy Layouts



<https://alluringbi.com/gallery/>

# Publish to the Service


- Publishing
- Workspaces
- Content & Datasets
- Access



# Scheduled Refresh

- Standard Workspace – 8 x Day
- Premium Workspace – 48 x Day
- Check Credentials

## Data source credentials

CommonDataService [Edit credentials](#) [Show in lineage view](#) 

## Parameters

### Refresh

Configure a refresh schedule

Define a data refresh schedule to import data from the data source into the dataset. [Learn more](#)

☒ On

Refresh frequency

Daily ▼

Time zone

(UTC) Dublin, Edinburgh, Lisbon, Londr ▼

Time

3 ▼ 00 ▼ AM ▼ ×

9 ▼ 00 ▼ AM ▼ ×

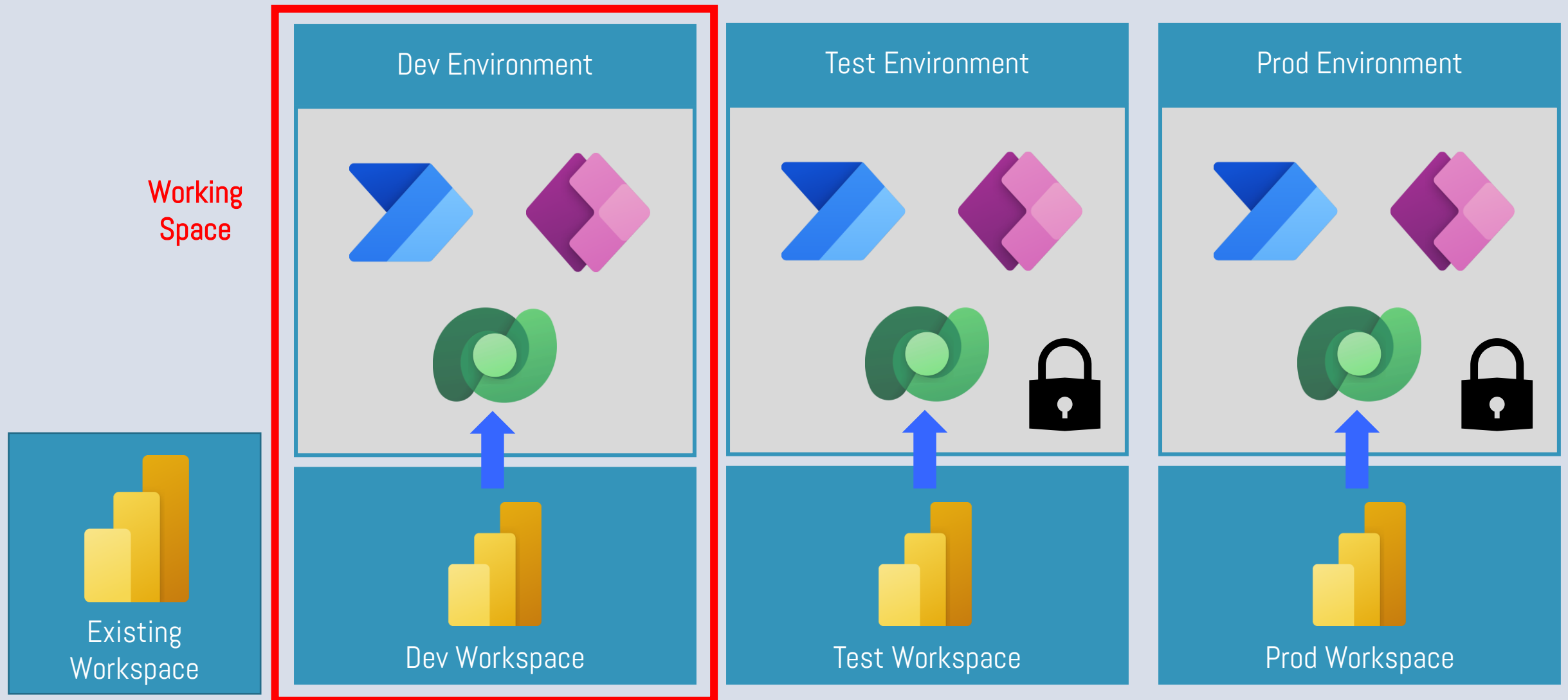
11 ▼ 00 ▼ AM ▼ ×

2 ▼ 00 ▼ PM ▼ ×

5 ▼ 00 ▼ PM ▼ ×

[Add another time](#)

# Power BI in Solutions





# Magic JSON bit

```
{
  "Filter": "[
    {\\"$schema\\":\\"basic\\",
      \\"target\\":{
        \\"table\\":\\"Account\\",
        \\"column\\":\\"AccountID\\"
      },
      \\"operator\\":\\"In\\",
      \\"values\\":[$a],
      \\"filterType\\":1}
  ]",
  "Alias": {"$a": "accountid"}
}
```

Comes from  
Power BI  
model

Comes from  
Dataverse  
model

# Extras

- Embed Power BI report
  - Teams
  - PowerPoint
- Power Automate
  - Automate Refreshing
  - Automate reports





# Q&A



# THANK YOU!