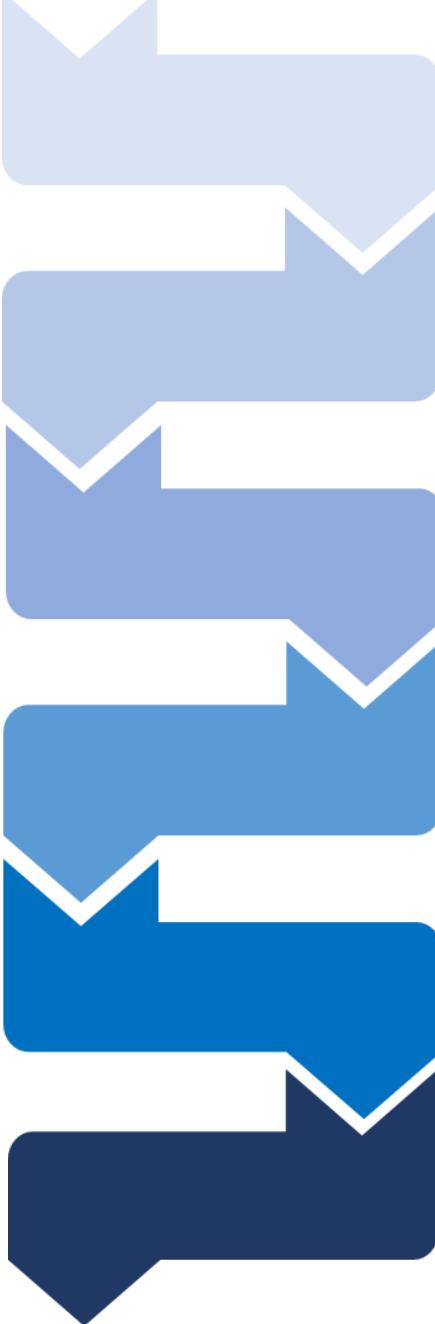


Mastering Data Analytics

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- 
- 1 Fundamental BI & Analytical Thinking
 - 2 End-to-End BI Workflow in Power BI
 - 3 Descriptive Statistics & Analytics
 - 4 Diagnostics Analytics
 - 5 Analytical Idea Presentation
(Dashboard – Insight - Story)
 - 6 Business Intelligence Capstone



MASTERING DATA ANALYTICS



BUSINESS INTELLIGENCE

Module 2: End-to-End BI Workflow
in Power BI (Part 2)

2. End-to-End Business Intelligence Workflow in Power BI

01

Data Preparation

1. Power Query Overview
2. Get Data
3. PQ – Basic Transform Data
4. Profiling Data
5. Data Issues
 - 5a. Bad Shape + Dirty Data
 - 5b. Missing Data + Outliers
5. Combine Data from Folder
6. Blending Data
7. Checklist

02

Data Modelling

1. Data Model Overview
2. Fact & Dimension
3. Schema
4. Cardinality
5. Cross Filter Direction
6. Hierarchies

03

End-to-End in Power BI Cloud

1. Introduce PBI Ecosystem (PBI Service)
2. Connect Data
3. Prep Data (On Pro & Premium)
4. Data Modeling
5. Report and Dashboard
6. Refresh Scorecard & Metrics
7. Sharing, Collaboration, (PBI Mobile)
8. Deployment Pipelines



POWER BI SERVICE

A large, semi-transparent black diagonal band runs from the top left towards the bottom right. Overlaid on this band is a hand interacting with a digital interface. The interface displays a stock market chart with a green line graph, some numerical values (e.g., 3,690.47, 19.580, 29,140.36, 124,825), and a light blue circular cursor pointing upwards. The overall theme is data analysis and business intelligence.

**PART 1: Introduce PBI Ecosystem
(PBI Service)**

PART 2: Connecting data

PART 3: Prep Data (On Pro & Premium)

PART 4: Data Modeling

PART 5: Report and Dashboard

PART 6: Refresh Scorecard & Metrics

PART 7: Sharing, Collaboration, (PBI Mobile)

PART 8: Deployment Pipelines

Introduce PBI Ecosystem (PBI Service)

More details for Testimonials



The screenshot displays a Power BI service interface with the following sections:

- POWER BI SERIES:** Shows six items labeled 01 through 06, each with a small icon and a preview.
- Folders:** A list of five folders:
 - 1. Power BI Desktop...
 - 2. Power BI Service...
 - 3. Power BI Mobile ...
 - 4. Power BI Report ...
 - 5. Power BI Report ...
 - 6. Power BI Embed... (partially visible)
- MINDMAP:** A large yellow button.
- DOCUMENT:** A large yellow button.
- RECORDS HƯỚNG DẪN:** A large yellow button.
- Content Preview:** A detailed preview of the first folder, showing a mindmap titled "Giới thiệu Power BI Desktop" with several nodes and sub-nodes, and a list of 12 video thumbnails.

Introduce PBI Ecosystem (PBI Service)

Overview Power BI Service



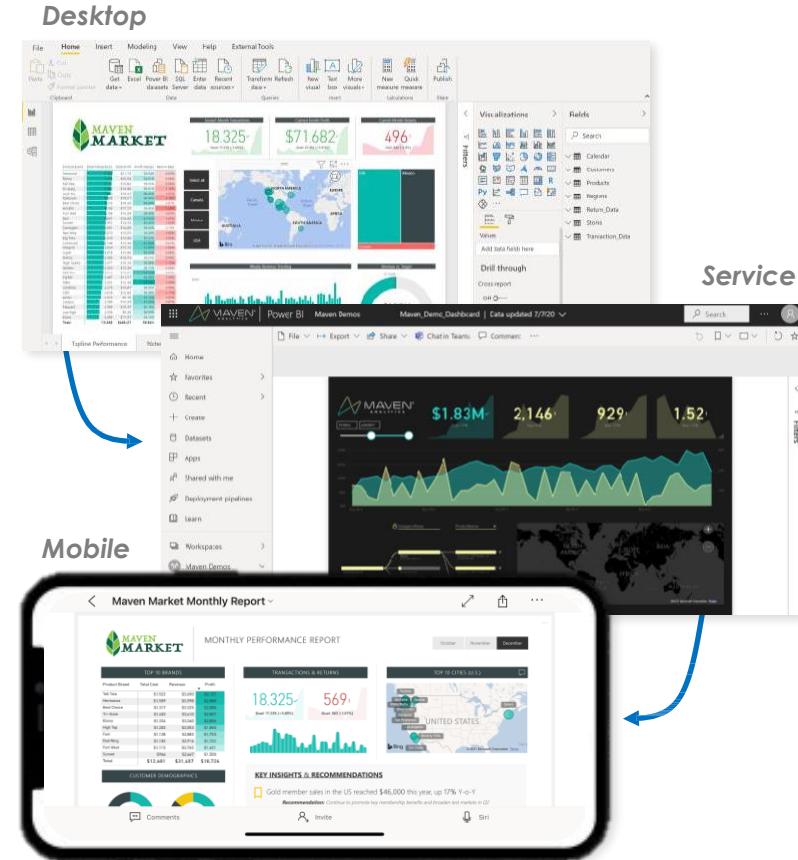
Power BI

Power BI Service (aka *Power BI online*) is a cloud-based business intelligence service designed to help users visualize, analyze and share data in a centralized online environment

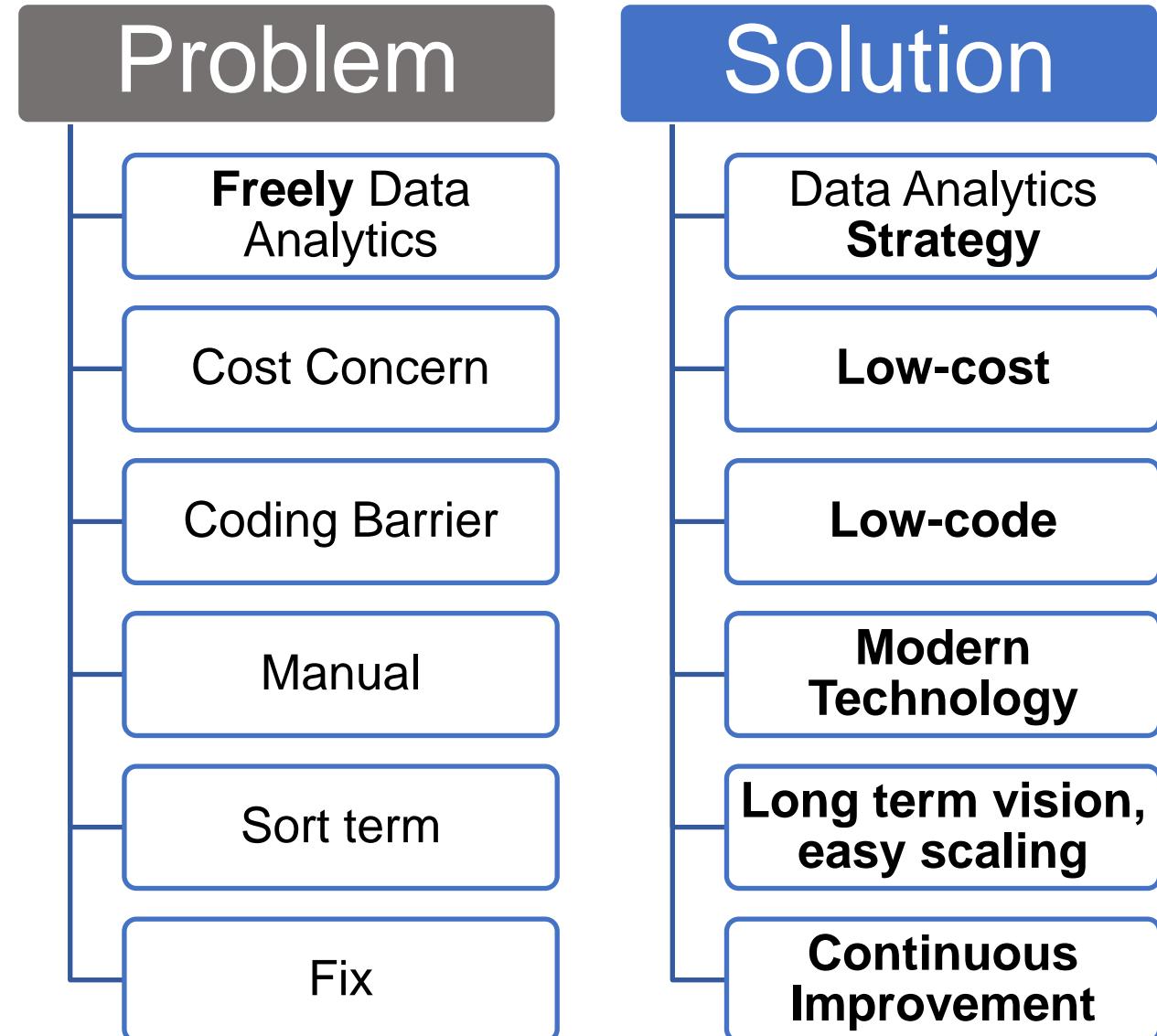
With Power BI Service, users can:

- Connect to online or on-premises data sources
- Build or publish reports and dashboards
- Collaborate through shared workspaces
- Version Power BI for Mac...

More info at powerbi.microsoft.com



SME's problem & solution

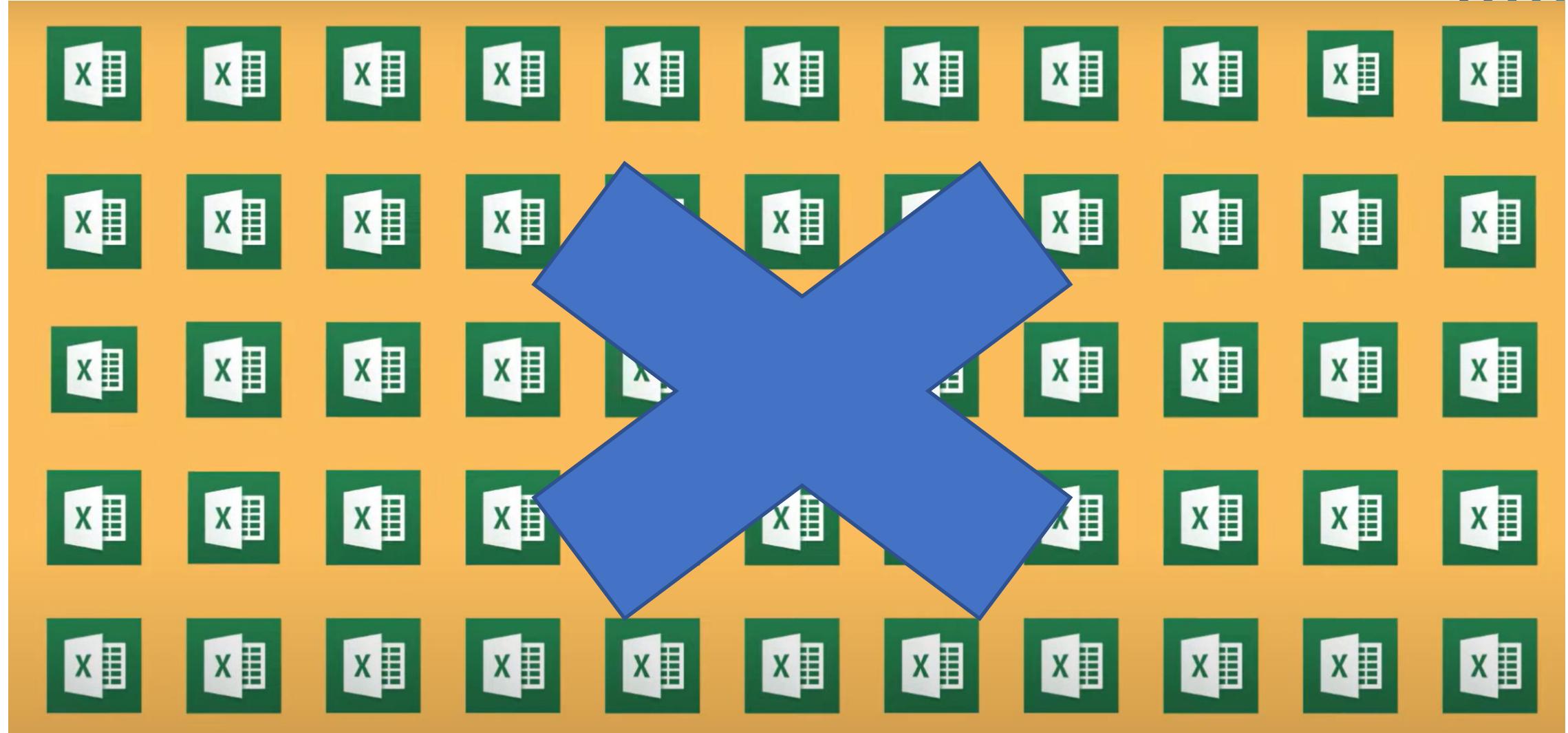


Data Strategy for SME

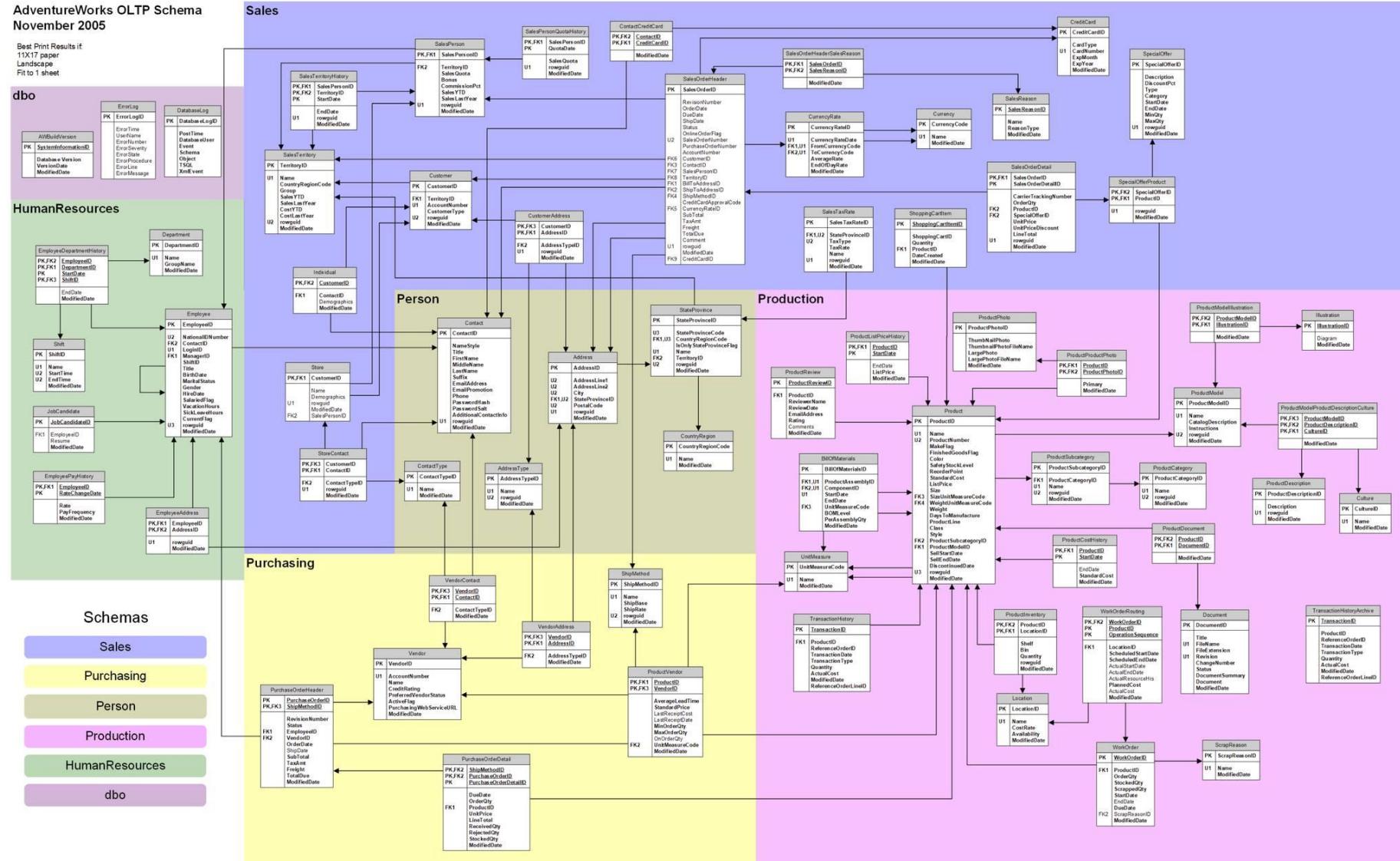


Think Big, Act Small

Doing Right Way



Sample Structure Organize



Introduce PBI Ecosystem (PBI Service) End - to - end analytics in Power BI



Industry recognition

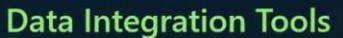


Figure 1: Magic Quadrant for Data Integration Tools



Cloud Database Management Systems

Figure 1: Magic Quadrant for Cloud Database Management Systems



Deve

Figure 1: Magic Quadrant for Cloud A

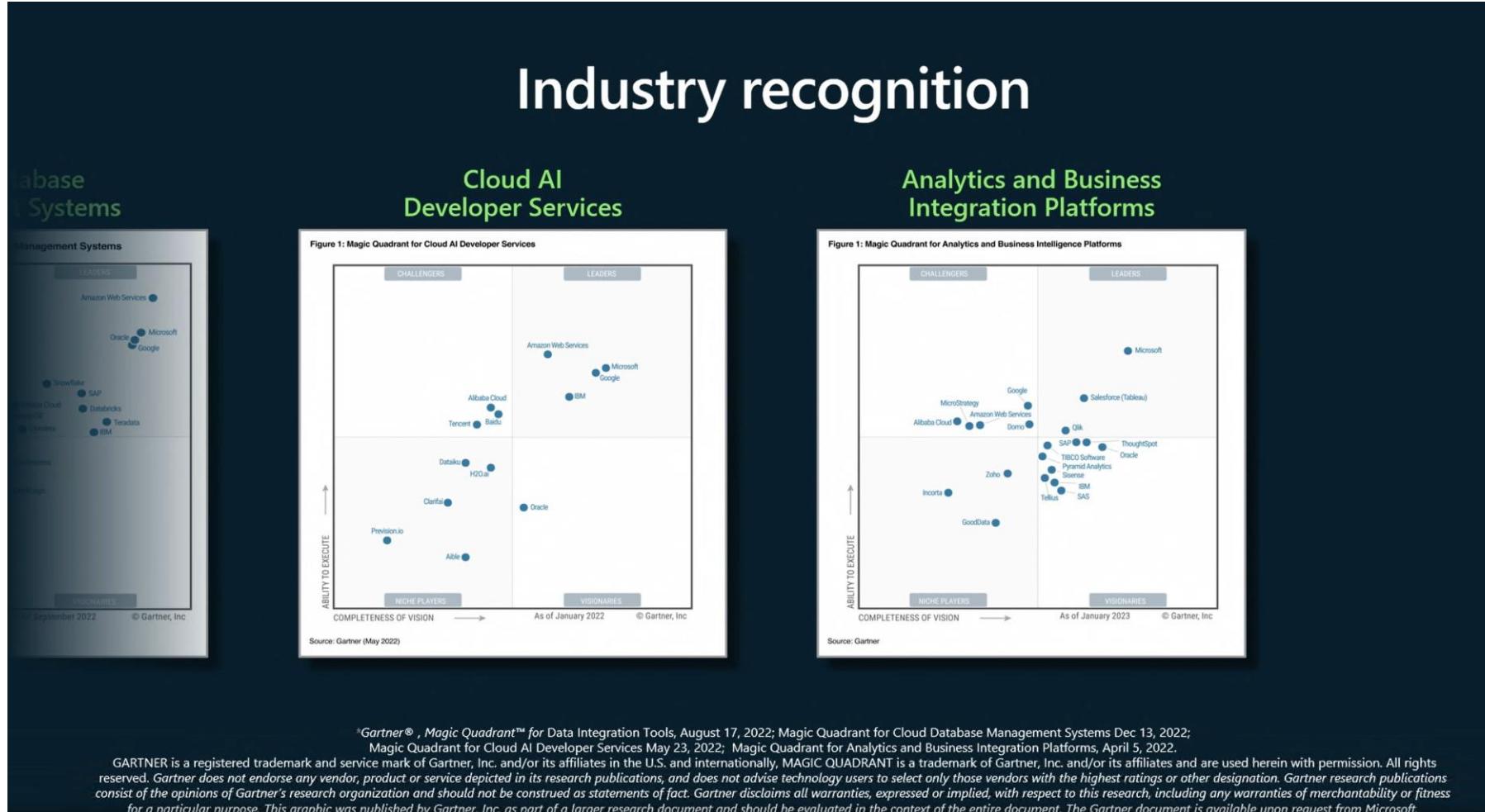


*Gartner®, Magic Quadrant™ for Data Integration Tools, August 17, 2022; Magic Quadrant for Cloud Database Management Systems Dec 13, 2022; Magic Quadrant for Cloud AI Developer Services May 23, 2022; Magic Quadrant for Analytics and Business Integration Platforms, April 5, 2022.

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Introduce PBI Ecosystem (PBI Service)

End - to - end analytics in Power BI



Introduce PBI Ecosystem (PBI Service)

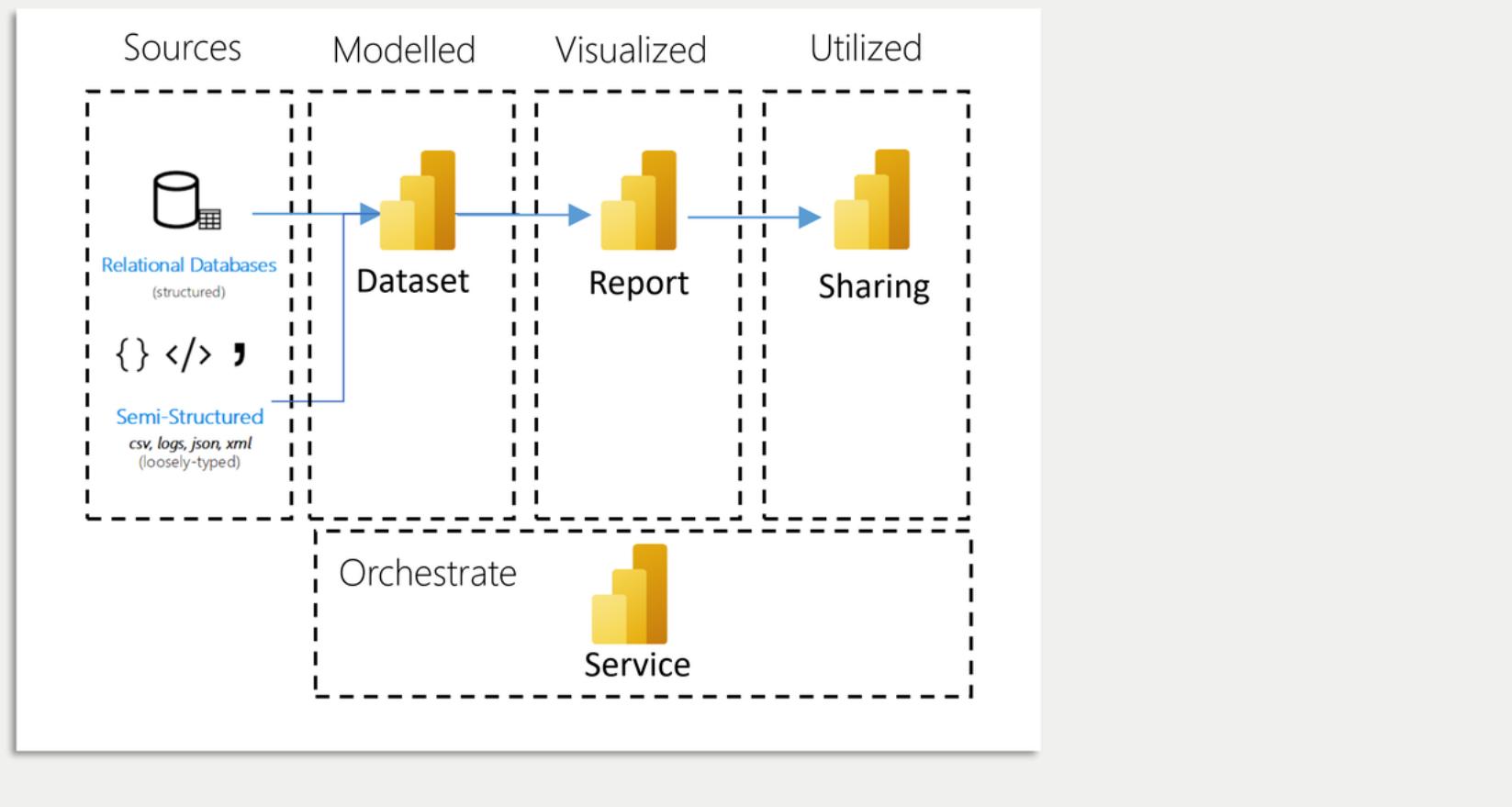
End - to - end analytics in Power BI



5 Million
Developers

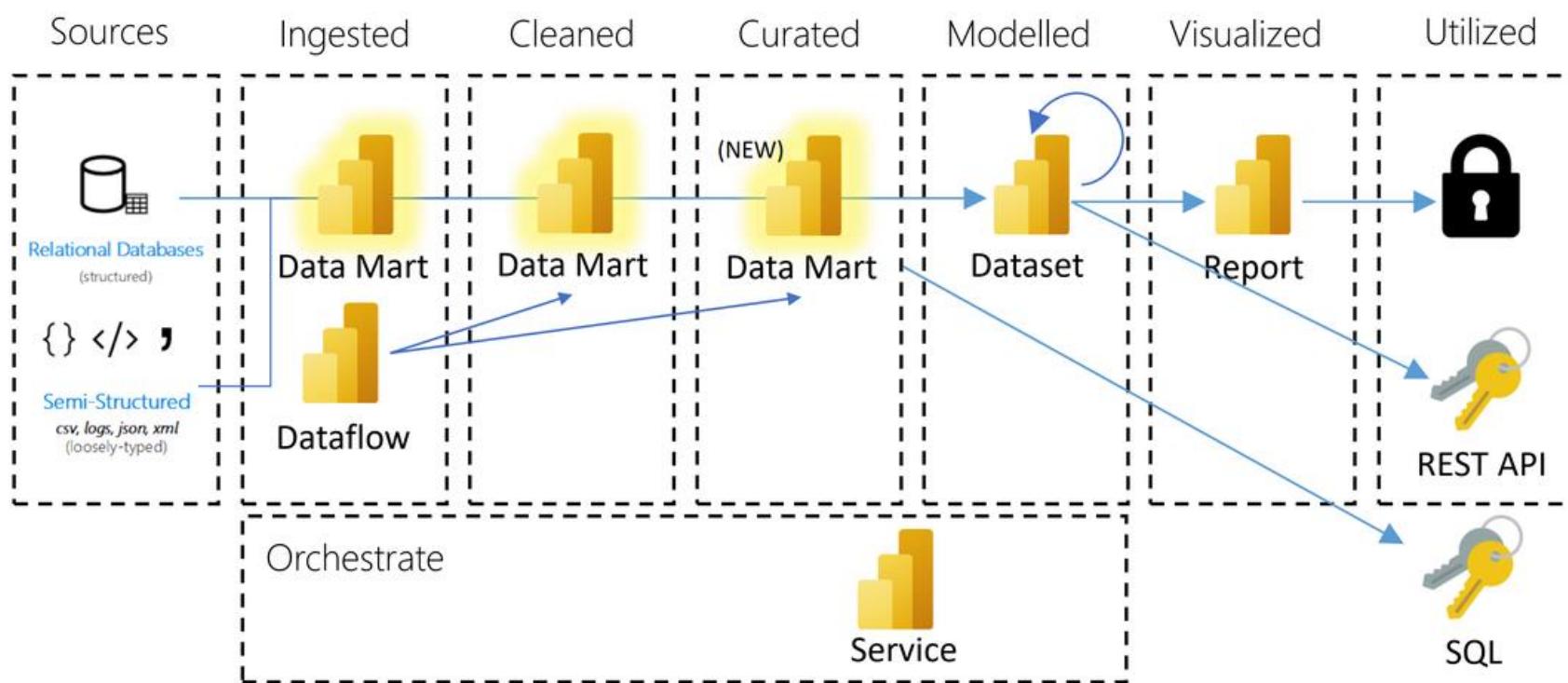


End-to-end analytics in Power BI



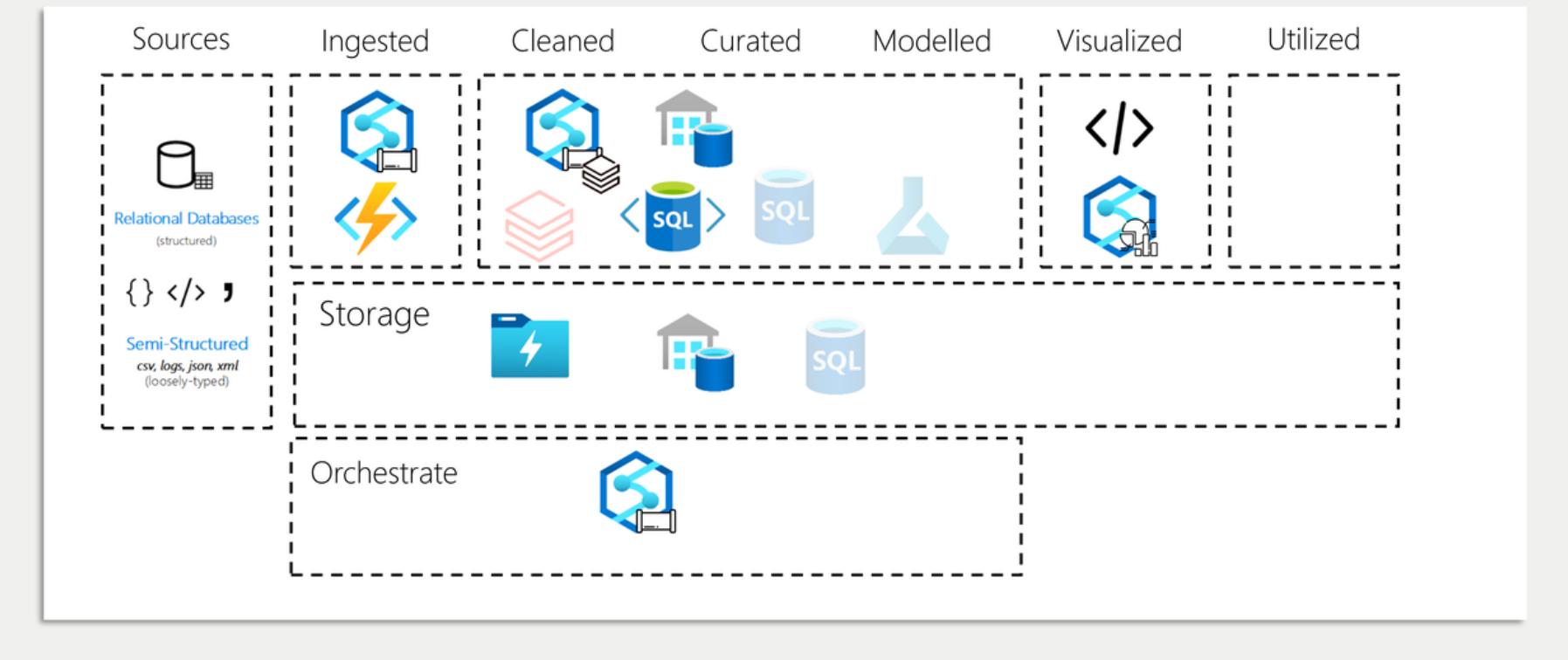
POWER BI FREE

End-to-end analytics in Power BI





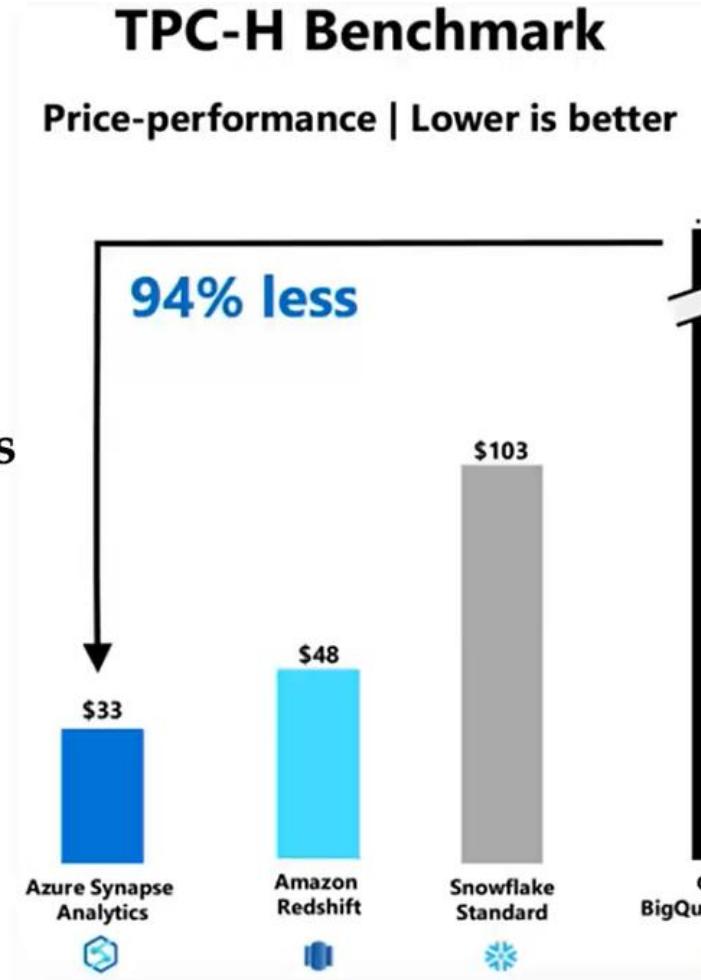
End-to-end analytics in Azure Synapse





Up to 14x faster

Costs 94% less than other cloud providers



- SERVERLESS
- NO INFRASTRUCTURE
- NO PAY FIRST -> pay-as-you-go
- SECURITY
- EASY MIGRATE
- LOW-CODE

End-to-End Business Intelligence LEVEL 3



Google Cloud ... Search (/) for resources, docs, products, and more

BigQuery Explorer + ADD ...

Type to search

Untitled 2 ...

Untitled 2 ...

1 SELECT * FROM `extreme-lore-388602...`_searchdata_site_impressions

Query results

JOB INFORMATION RESULTS JSON EXECUTION DETAILS EXECUTED

Highlight top stages by duration Highlight top stages by process

extreme-lore-388602.searc Data source 31,544

S00: Input Duration: 0.04 sec

S01: Output Duration: 0.01 sec

PERSONAL HISTORY PROJECT HISTORY

Add ...

Source ...

Search for data sources

Popular sources

Local file ... Google Cloud Storage ... Connections to external data sources ...

Upload a local file

Additional sources

Viewing all 26 results.

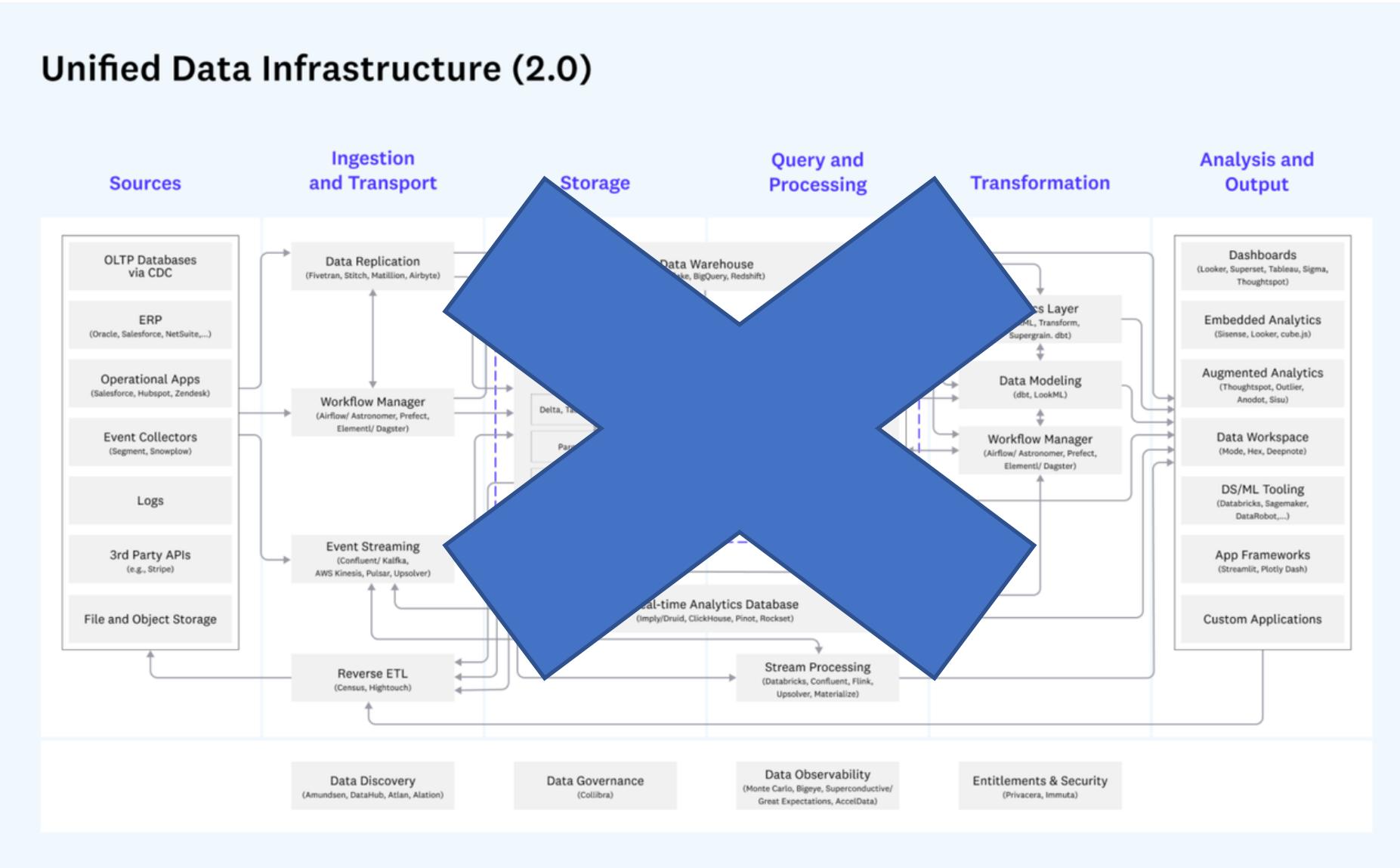
- Search for and star a project ...
- Star a project by name ...
- Analytics Hub ...
- Google Drive ...
- Amazon S3 - Data Transfer ...
- Azure Blob Storage (Preview) - Data Transfer ...
- Public Datasets ...
- Datastream ...
- Informatica Data Loader ...
- Fivetran Data Pipelines ...

CLOSE

Data Strategy for Enterprise



Unified Data Infrastructure (2.0)





PLEASE SIMPLIFY!

The slide features the Microsoft Fabric logo on the left and the tagline "Data analytics for the era of AI" in the center. Below this, seven service icons are arranged in a row: Data Factory (green plus), Synapse Data Engineering (blue gear), Synapse Data Science (blue Z), Synapse Data Warehouse (blue house), Synapse Real Time Analytics (blue lightning bolt), Power BI (yellow bar chart), and Data Activator (red circular arrow). A large blue rectangular area at the bottom contains the OneLake logo, which is a stylized blue wave-like shape above the word "OneLake".

Microsoft Fabric
Data analytics for the era of AI

Data Factory Synapse Data Engineering Synapse Data Science Synapse Data Warehouse Synapse Real Time Analytics Power BI Data Activator

OneLake

Introduce PBI Ecosystem (PBI Service)

End-to-End Analytics LEVEL 3



SKU	Capacity unit (CU)	Pay-as-you-go (hourly)	Pay-as-you-go (monthly)
F 2	2	\$0.36	\$262.80
F 4	4	\$0.72	\$525.60
F 8	8	\$1.44	\$1,051.20
F 16	16	\$2.88	\$2,102.40
F 32	32	\$5.76	\$4,204.80
F 64	64	\$11.52	\$8,409.60
F 128	128	\$23.04	\$16,819.20
F 256	256	\$46.08	\$33,638.40
F 512	512	\$92.16	\$67,276.80
F 1024	1024	\$184.32	\$134,553.60
F 2048	2048	\$368.64	\$269,107.20

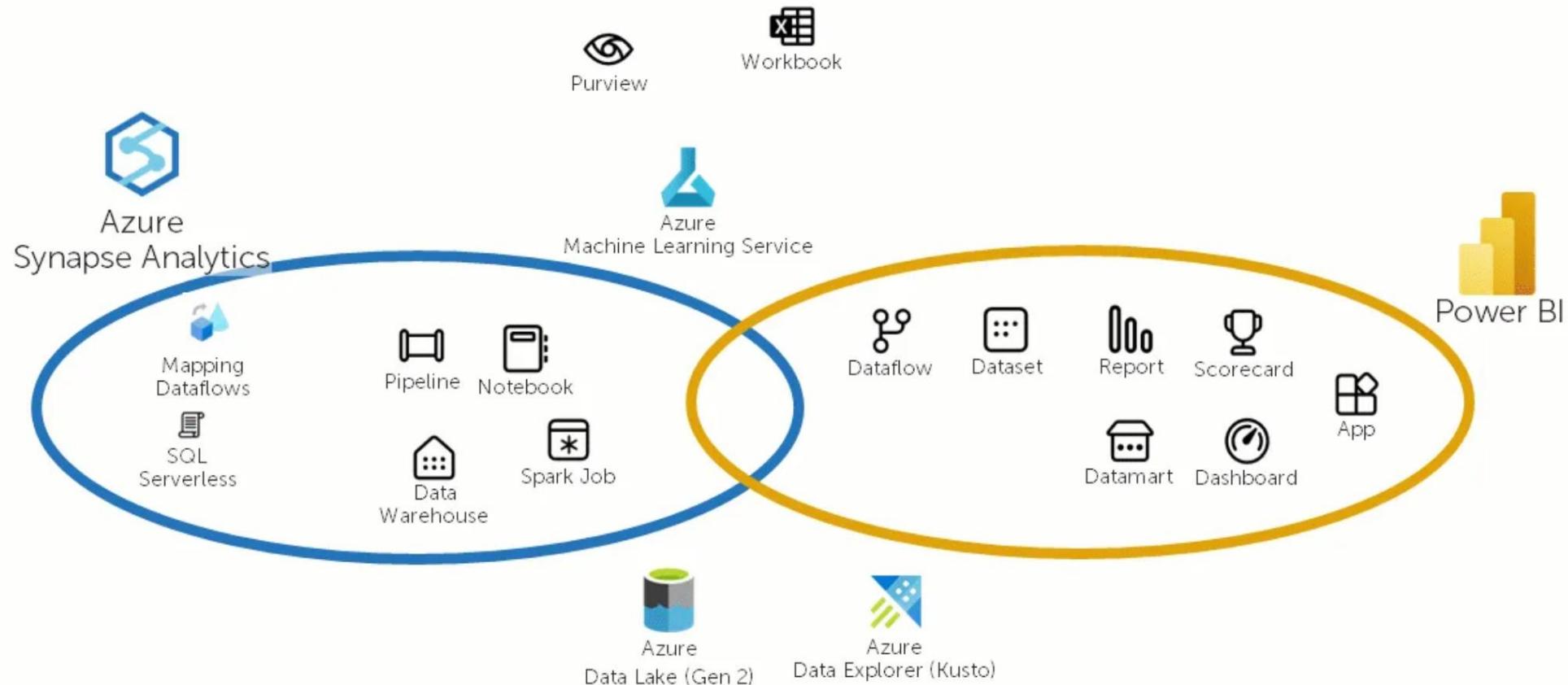
Table 1: Pricing of Fabric capacity SKUs at US west 2

Business Intelligence Terminology

Microsoft Fabric



Pre-Fabric

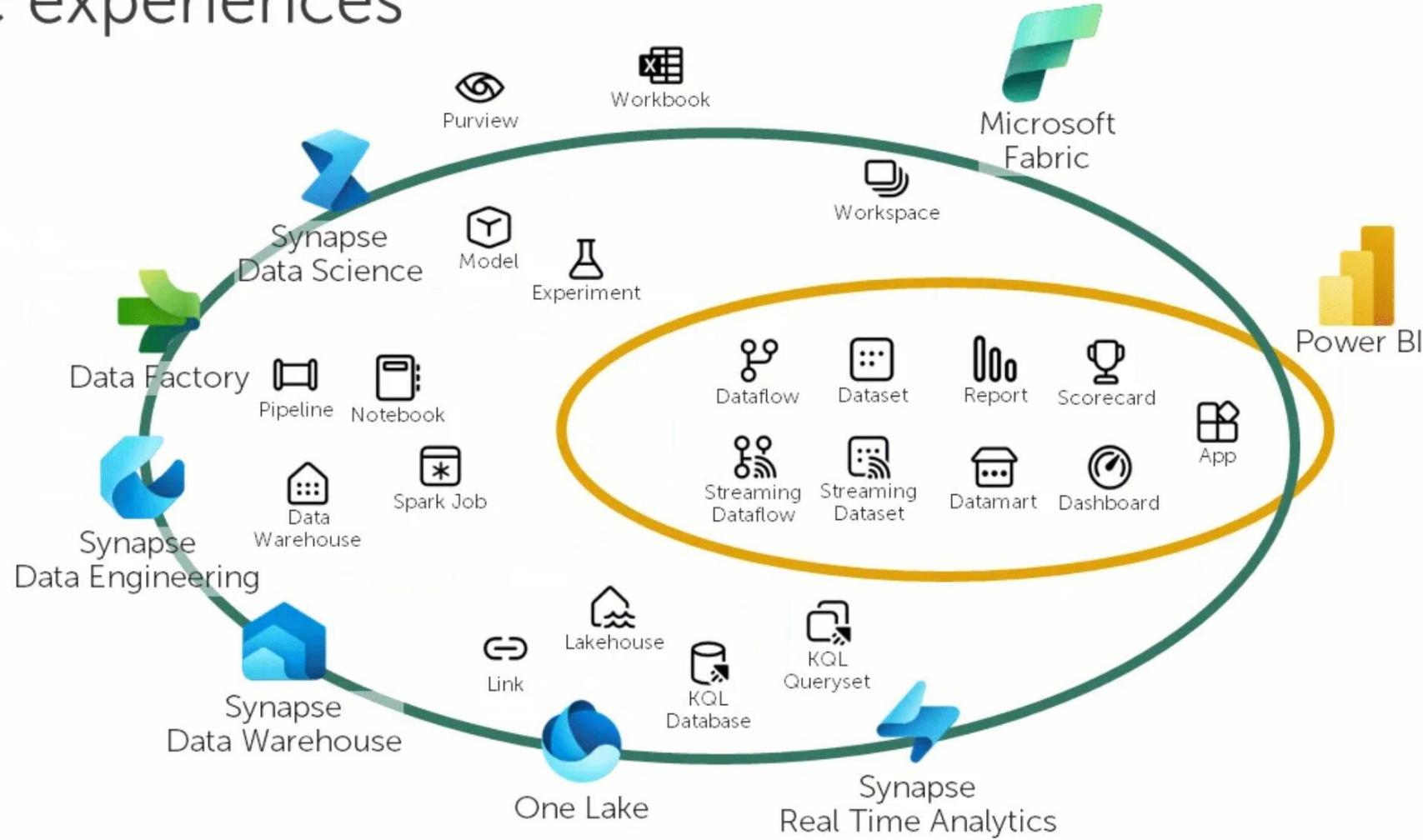


Business Intelligence Terminology

Microsoft Fabric



Fabric experiences

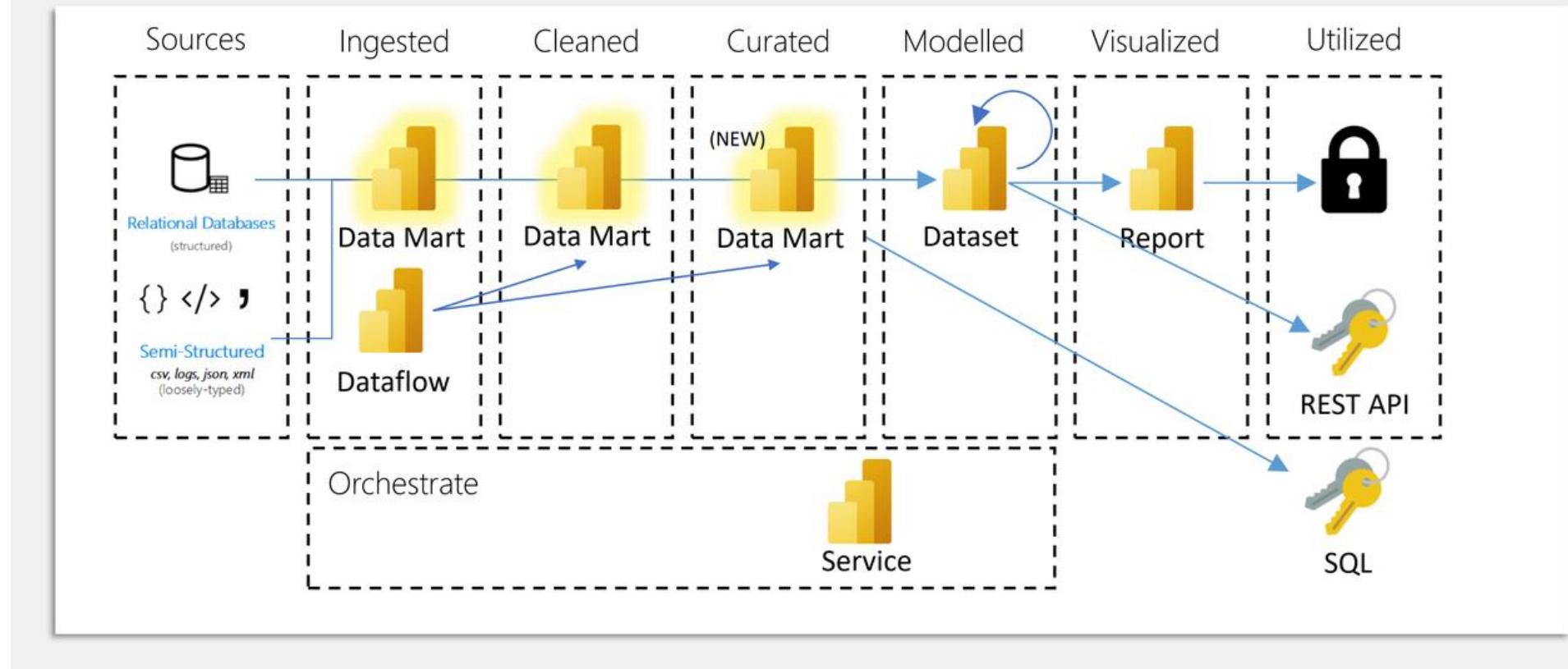


Introduce PBI Ecosystem (PBI Service)

End - to - end analytics in Power BI

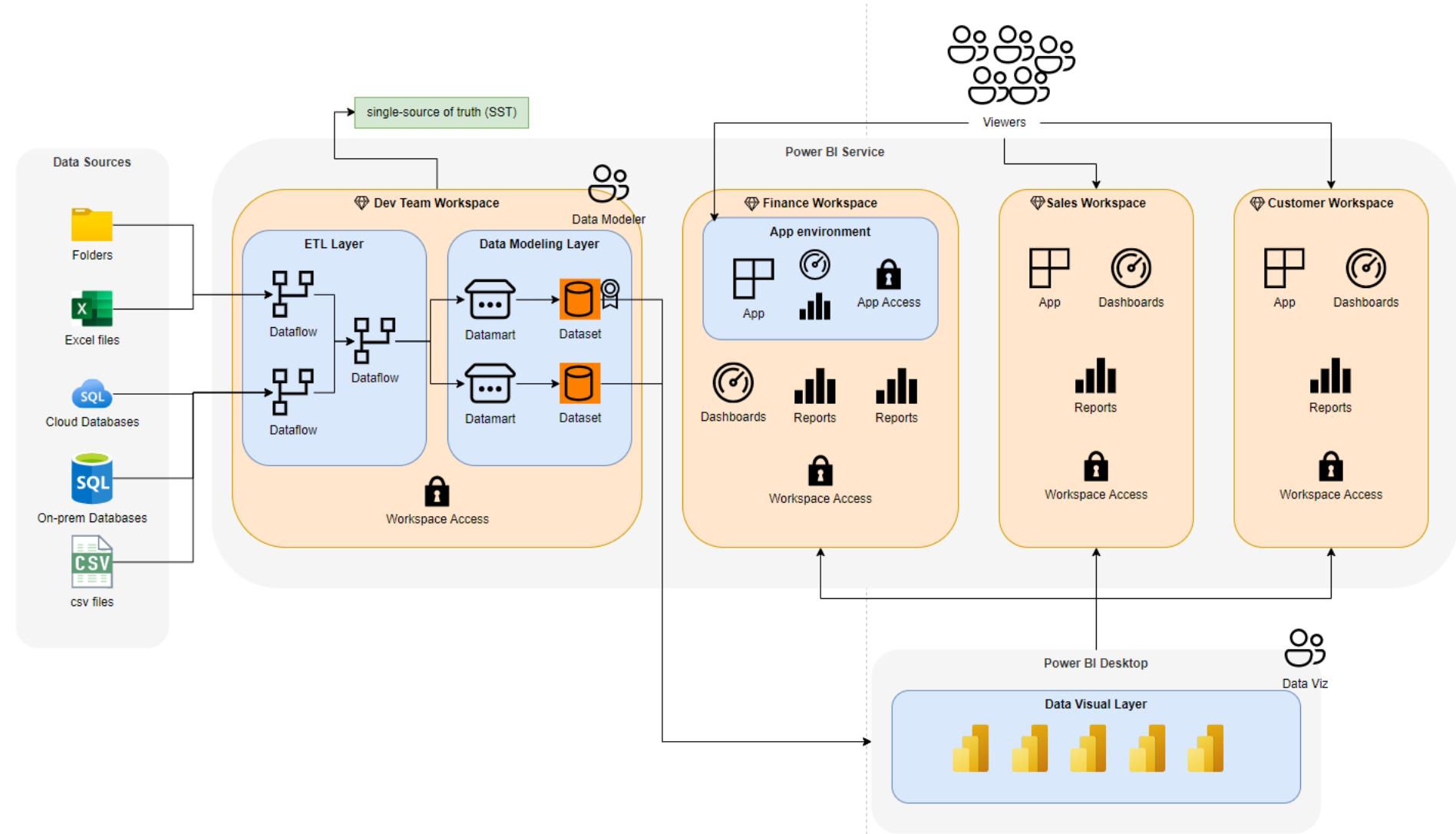


End-to-end analytics in Power BI



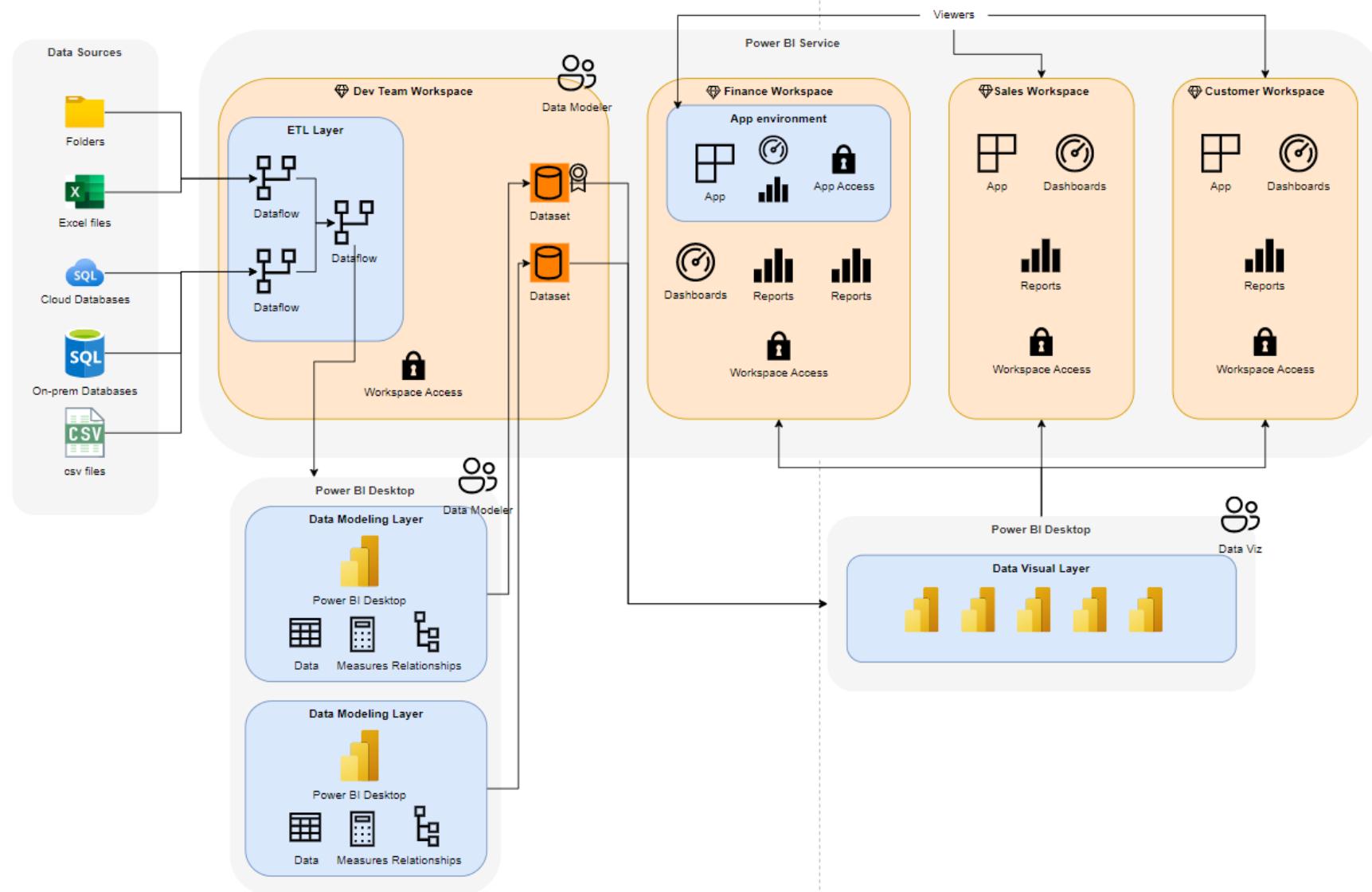
Introduce PBI Ecosystem (PBI Service)

End - to - end analytics in Power BI



Introduce PBI Ecosystem (PBI Service)

End - to - end analytics in Power BI



Introduce PBI Ecosystem (PBI Service)

Power BI Desktop & Power BI service



POWER BI DESKTOP

Data Sources (110+)

External tool

Some other functions
(Suggestion, Quick measure,...)

DAX Results Visible

Power Query

Modeling & Relationships

Measures (DAX)

Visualization Tools
(Custom, bookmarks, interactions, etc.)

Roles Creation

Calculated Columns (M code only)

POWER BI SERVICE

Data Sources (150+)

Dashboards
Quick Insights,
Auto-create report

Apps &
Workspaces

Gateways &
Dataflows

Datamart

Roles Management

Introduce PBI Ecosystem (PBI Service)

Power BI Desktop



Power BI Desktop Interface:

The screenshot shows the Power BI Desktop application window. The ribbon menu includes File, Home, Insert, Modeling, View, Help, and External Tools. The Home tab is selected, showing various data sources like Excel, Data, SQL Server, and Power BI Report. The ribbon also features a 'External Tools' section with icons for DAX Formatter, Analyze in Chrome, Edge, IE, Excel, DAX Beautifier, Business Ops Toolkit, ALM, DAX Studio, and Tabular Editor.

Quick Measure Panel:

The 'Quick measure' panel is open, prompting the user to select a calculation to create a measure or describe the measure they need. It includes sections for 'Calculations' and 'Suggestions with Copilot'. A red box highlights the 'Suggestions with Copilot' button.

Visualizations and Data Panels:

The right side of the interface contains two main panels: 'Visualizations' and 'Data'. The 'Visualizations' panel shows a grid of visualization icons. The 'Data' panel displays a list of available calculations, including 'DAX Measure', 'DIMChannel', 'DIMDate', 'DIMGeography', 'DIMProduct Master', 'DimPromotion', 'DIMStore (Full)', and 'FACT Sale'. A red box highlights the 'Suggestions with Copilot' section in the Data panel.

Bottom Navigation and Status Bar:

The bottom navigation bar includes tabs for 'Cat-Cat', 'Sankey', 'DAR', 'Key Drivers_Profit Margin', 'Page', and a '+' icon. The status bar at the bottom right shows the zoom level as 39%.

Introduce PBI Ecosystem (PBI Service)

Power BI Desktop



Contoso_Data_Exploration - Power BI Desktop

File Home Insert Modeling View Optimize Help Format Data / Drill Table tools Measure tools

Name Profit Margin Format Percentage Data category Uncategorized

Home table DAX Measure \$ % New Quick measure measure

Structure

Formatting

Properties Calculations

1 Profit Margin =
2 DIVIDE(SUM('FACT Sale'[Profit]), SUM('FACT Sale'[SalesAmount]))

Visualizations

Data

DAX Measure Profit Margin

Profit Margin by Month

Profit Margin by ClassName

54% Profit Margin

Ask a question about your data

Try one of these to get started

top color names by profit margin top brand names by profit margin

Show all suggestions

Fields

Profit Margin

Drill through

Cross-report

Keep all filters

Deployment pipelines

Learn

Workspaces

9 BI_Sales Contoso

Contoso Sale... Sale

Completed (1.49 s) Columns: 17 Rows: 99+

Page 21 of 23

30

The screenshot shows the Power BI Desktop interface with the 'Measure tools' tab selected. A DAX measure named 'Profit Margin' is being defined, with the formula `1 Profit Margin =
2 DIVIDE(SUM('FACT Sale'[Profit]), SUM('FACT Sale'[SalesAmount]))`. To the right, there's a bar chart titled 'Profit Margin by Month' showing monthly sales and profit margins, with a callout '54%' pointing to the profit margin value. Below the chart is a gauge titled 'Profit Margin'. On the left, the 'Tables' section of the Explorer pane is visible, showing tables like 'DIMChannel', 'FACTSales', and 'Sale'. The 'Sale' table is currently selected, highlighted with a red box. The bottom of the screen shows a table with 99 rows of sales data.

Introduce PBI Ecosystem (PBI Service)

End - to - end analytics in Power BI



File ▾ View ▾ Reading view Mobile layout Open data model

Explore ▾ Text box Shapes Buttons Visual interactions Refresh Duplicate this page Save ...

Home Create Browse OneLake data hub Apps Metrics Monitoring hub Deployment pipelines Learn Workspaces 9. BI_Sales Contoso

Build visual

Filters

Search

Filters on this page Add data fields here

Filters on all pages Add data fields here

Visualizations

Build visual

Data

Search

DIMChannel

DIMDate

DIMGeography

DIMProduct

DIMStore_full

Collapse all

Expand all

DateKey

Σ DiscountAmount

Σ DiscountQuantity

GeographyKey

ProductKey

Σ PromotionKey

Σ ReturnAmount

Σ ReturnQuantity

Sale

Σ SalesAmount

Σ SalesKey

Σ SalesQuantity

StoreKey

Σ TotalCost

UnitCost

Σ UnitPrice

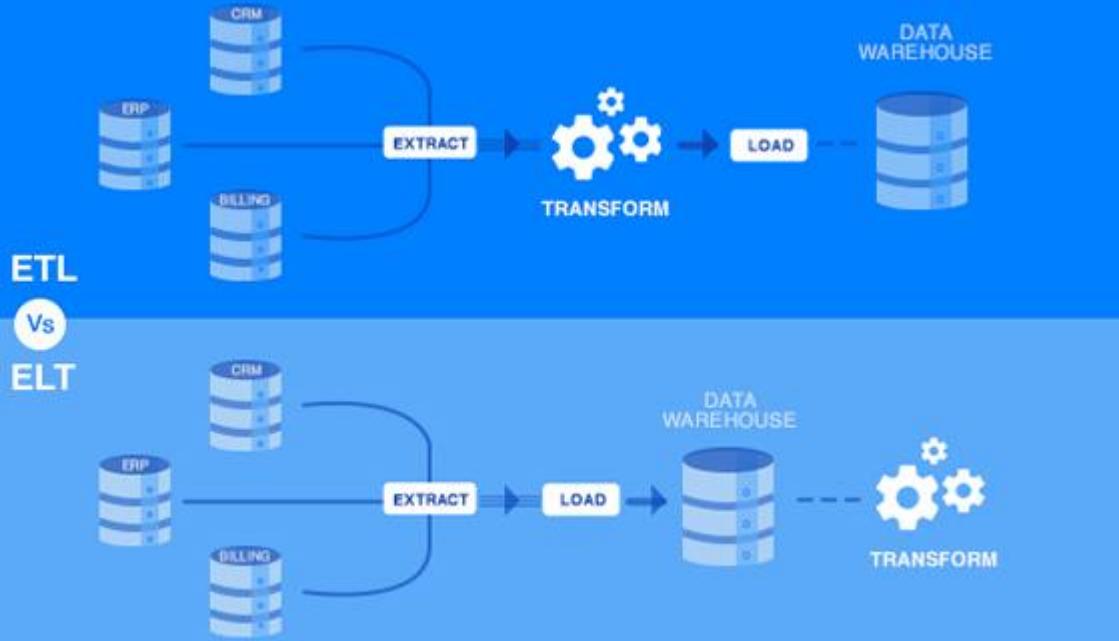
Build visuals with your data

Select or drag fields from the Data pane onto the report canvas.

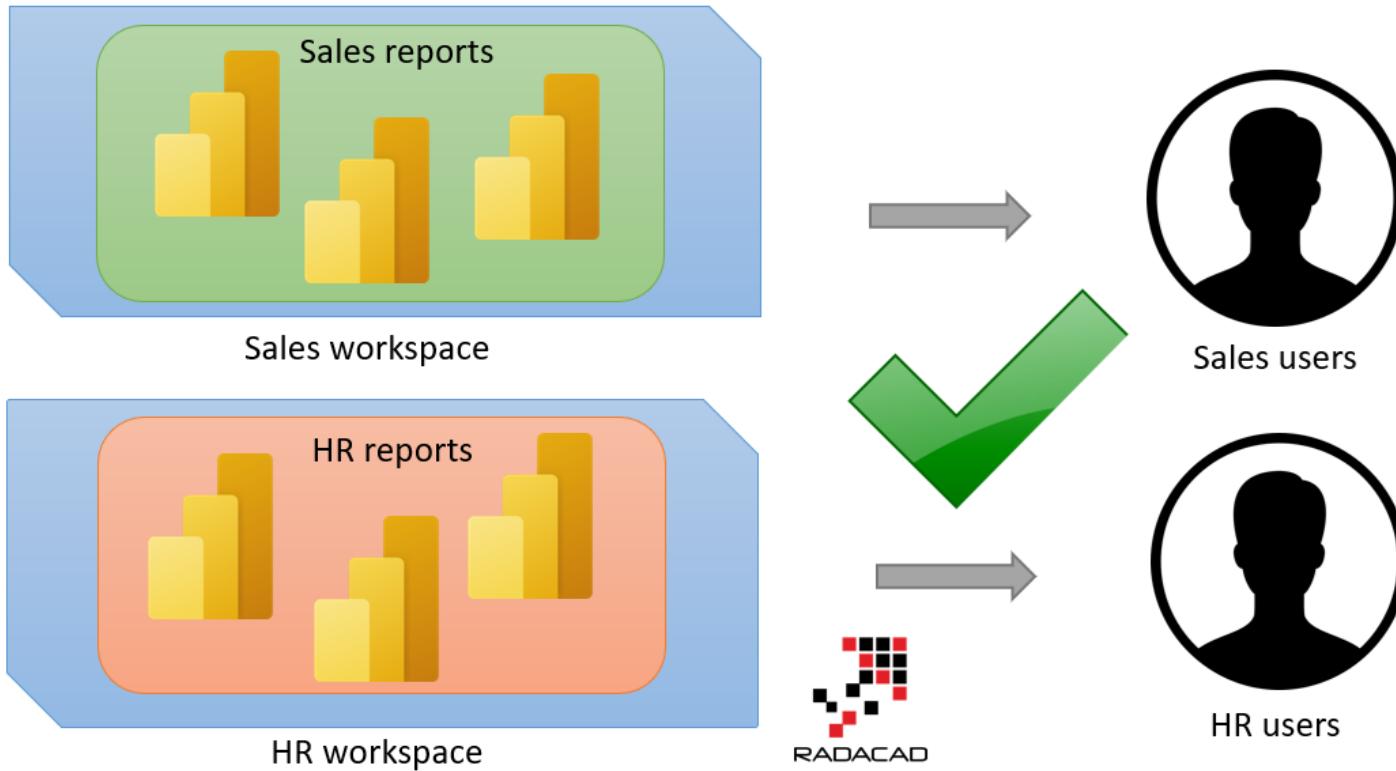
The screenshot shows the Power BI service interface. On the left is a navigation bar with various icons for Home, Create, Browse, etc. The main area has a title 'Build visuals with your data' and instructions 'Select or drag fields from the Data pane onto the report canvas.' Below this is a report canvas with a dashed box and a field list icon. To the right is the 'Data' pane, which contains sections for Filters, Visualizations, and Data. The 'Data' section lists several dimensions and measures from a data model, such as DIMChannel, DIMDate, DIMGeography, DIMProduct, DIMStore_full, DateKey, Σ DiscountAmount, Σ DiscountQuantity, GeographyKey, ProductKey, Σ PromotionKey, Σ ReturnAmount, Σ ReturnQuantity, Sale, Σ SalesAmount, Σ SalesKey, Σ SalesQuantity, StoreKey, Σ TotalCost, UnitCost, and Σ UnitPrice. A red box highlights the 'Collapse all' and 'Expand all' buttons under the 'Data' section, and another red box highlights the 'Sale' field in the list.

Introduce PBI Ecosystem (PBI Service)

End - to - end analytics in Power BI



Separate workspaces for different audiences



Introduce PBI Ecosystem (PBI Service)

Power BI Account



POWER BI FREE

No license required but users have limited access and can't collaborate or distribute content

Capabilities:

- No license Required
- Connect to 110+ Data Sources (desktop & service)
- Publish to Web
- Export to PowerPoint, Excel, CSV...
- Create metrics
- Share with Pro or Premium,...

POWER BI PRO

Individually licensed and can leverage all content creation and interaction features

Capabilities:

- All from **Free tier +**
- User-based License
- Workspaces
- Email Subscriptions
- Peer-to-Peer Sharing
- Publish Apps
- Data gateways
- Dataflows
- Analyze in Excel & Power BI Desktop

POWER BI PREMIUM PER USER

Individually licensed and can leverage all content creation, interaction and most premium features

Capabilities:

All from **Pro tier +**

- AI Capabilities (ML, Impact Analysis, Cognitive Services)
- Advanced Dataflows (Direct Query)
- Deployment Pipelines
- XMLA Endpoint Connectivity
- Datamart
- Incremental refresh

Introduce PBI Ecosystem (PBI Service) Power BI Account



Power BI **PREMIUM**

Licensing based on dedicated capacity vs. number of users; content can be viewed without additional per-user costs

Capabilities:

- Capacity-based license without need for individual user licenses
- Greater scale & performance than shared capacity

NOTE: Pro licenses still required to publish, share, and collaborate

Feature ³	Power BI Pro	Power BI Premium Per user	Power BI Premium Per capacity
Collaboration and analytics			
Mobile app access	●	●	●
Publish reports to share and collaborate	●	●	
Paginated (RDL) reports	●	●	●
Consume content without a per-user license			●
On-premises reporting with Power BI Report Server			●
Data prep, modeling, and visualization			
Model memory size limit ⁴	1 GB	100 GB	400 GB
Refresh rate	8/day	48/day	48/day
Connect to more than 100 data sources	●	●	●
Create reports and visualizations with Power BI Desktop ⁵	●	●	●
Embed APIs and controls	●	●	●
AI visuals	●	●	●
Advanced AI (text analytics, image detection, automated machine learning)		●	●
XMLA endpoint read/write connectivity		●	●
Dataflows (direct query, linked and computed entities, enhanced compute engine)		●	●
Datamart creation		●	●

Introduce PBI Ecosystem (PBI Service) Power BI Account



Power BI **PREMIUM**

Licensing based on dedicated capacity vs. number of users; content can be viewed without additional per-user costs

Capabilities:

- Capacity-based license
- Publish company reports without need for individual user licenses
- Greater scale & performance than shared capacity

NOTE: Pro licenses still required to publish, share, and collaborate

Feature ³	Power BI Pro	Power BI Premium Per user	Power BI Premium Per capacity
Governance and administration			
Data security and encryption	•	•	•
Metrics for content creation, consumption, and publishing	•	•	•
Application lifecycle management		•	•
Multi-geo deployment management			•
Bring your own key (BYOK)			•
Autoscale add-on availability			•
Maximum storage	10 GB/user	100 TB	100 TB

Introduce PBI Ecosystem (PBI Service)

Power BI Desktop



Unclarities and current limitations

Limit of 100GB per Datamart (only during preview?)

Request ID ↑↓	Request content ↑↓	Submit time ↑↓	Duration	Data processed	Status ↑↓
995217	select [\$Table].[Supplie... More	6/11/22, 8:39:12 AM	14 sec	10.00 MB	✓ Completed
995910	select [\$Table].[SaleKey... More	6/11/22, 8:39:09 AM	6 min	163.00 GB	✓ Completed
995143	select [\$Table].[CityKey... More	6/11/22, 8:39:09 AM	17 sec	16.00 MB	✓ Completed
995059	select [\$Table].[DateKe... More	6/11/22, 8:39:09 AM	16 sec	10.00 MB	✓ Completed
995128	select [\$Table].[Custom... More	6/11/22, 8:39:09 AM	17 sec	10.00 MB	✓ Completed

Refresh history		
Time	Duration	Status
06/11/2022 08:39 am	15:00:57	Completed

According to documentation, Datamarts should support up to 100GB of data at this point in time. However, in my test runs, I managed to load **163GB** of data. Below image shows the total data volume processed in Azure Synapse Analytics (top screenshot) and the successful refresh of the Power BI Datamart (bottom screenshot).

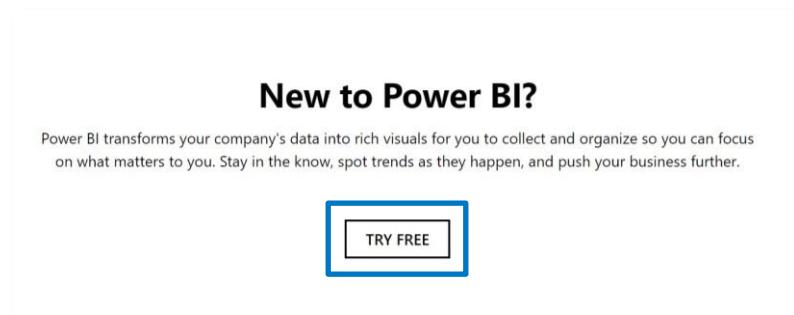
Introduce PBI Ecosystem (PBI Service)

Creating A New Power BI Account



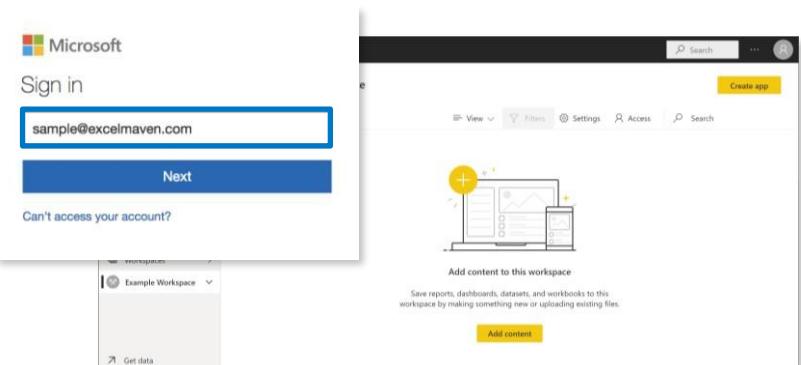
1

- Head to powerbi.microsoft.com/landing/signin and click **TRY FREE**
- Note:** Head to **Step 3** if you already have an account



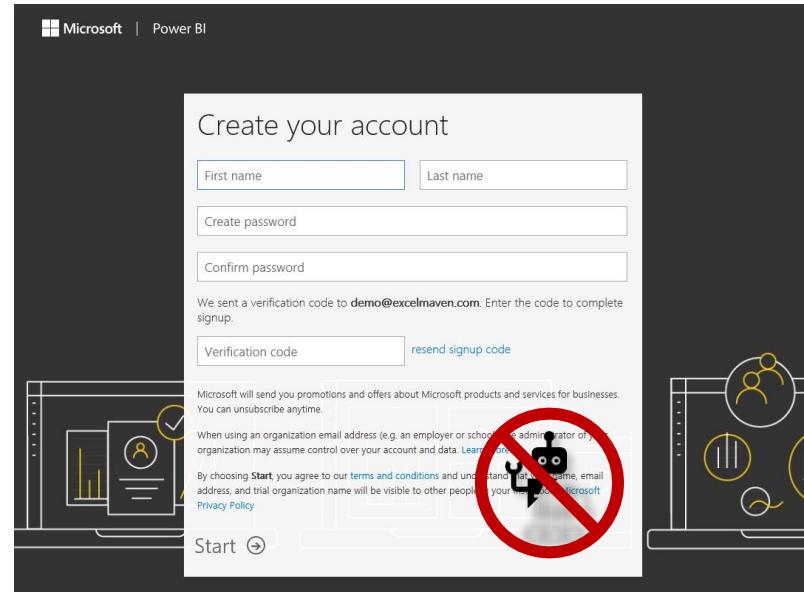
3

- Once you've created your account, navigate directly to app.powerbi.com to log in



2

- Enter your name, create a password, verify your email, and confirm you're not a robot



HEY THIS IS IMPORTANT!

Microsoft requires a **work or school email address**. Domains like @gmail, @yahoo, @outlook will not be accepted

Introduce PBI Ecosystem (PBI Service)

Creating A New Power BI Account



You can sign up for a free Office 365 E5 trial account with **any email address**, which includes an automatic sign-up for Power BI Pro

Link: https://docs.google.com/document/d/1vmHk3UHTVxFW8_uMwDX_rZaGdTakEkmU/edit

- Head to: <https://www.microsoft.com/en-us/microsoft-365/enterprise/compare-office-365-plans>
- Select **Try for free** within the Office 365 E3 or E5 menu and receive a 30-day free trial

1 Enter your email and click **Set up account**

2 Fill in the required info and verify your phone number

3 Set up a domain name, username and password

4 You're ready to use Power BI Service (Pro)!

The image shows a sequence of four screenshots from the Microsoft account setup process:

- Screenshot 1:** A message says "Looks like you need to create a new account. Let's get you started!" with a "Set up account" button.
- Screenshot 2:** A text input field asks for a phone number, with options to "Text me" or "Call me". It includes a "Country code" dropdown set to "+1 United States" and a "Phone number" input field. A note says "We don't save this phone number or use it for any other purpose." with "Send verification code" and "Back" buttons.
- Screenshot 3:** A message says "To set up your account, you'll need a domain name. What is a domain?" with a link. It asks to choose a domain name using "onmicrosoft.com". An input field shows "curleyinsurance.onmicrosoft.com" with "Check availability" and "Next" buttons. A note says "You'll probably want a custom domain name for your business at some point. For now, choose a name for your domain using onmicrosoft.com".
- Screenshot 4:** A message says "You're all set" with "Save this info. You'll need it later." A note says "Your user ID: aaron@curleyinsurance.onmicrosoft.com". It has "Go to setup" and "Manage your subscription" buttons.

Introduce PBI Ecosystem (PBI Service)

Creating A New Power BI Account



1

Power BI Pro Easily share and collaborate on interactive data visualizations. [Learn more](#)

Buy now

Try free

X

2

Try Premium per user for free

To use this feature, upgrade to a Premium per user license. When you upgrade, you'll have access to all Premium features including paginated reports, deployment pipelines, and new AI capabilities.

Try Premium per user free for 60 days. [Learn more](#)

Start trial

Cancel

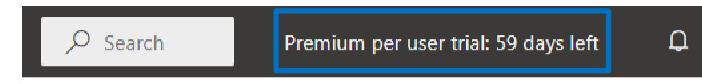
3

A Premium per user license is yours for 60 days

You get to use all Premium per user features for the next 60 days. If you love it, upgrade to a Premium per user license.

Got it

Your **trial period** lasts for **60 days**, and you'll see your remaining time in the header bar each time you log in



≡ View ▾ Filters Settings Access



HEY THIS IS IMPORTANT!

We are activating a **Premium per User (PPU) trial**

All Pro features are included with a PPU trial, and we'll focus on additional features included with PPU later in the course

Introduce PBI Ecosystem (PBI Service)

Microsoft 365 E5



Microsoft 365 E5 includes



Word



Excel



PowerPoint



Outlook



OneNote



SharePoint



OneDrive



Microsoft Team



Power BI Pro



Windows

Introduce PBI Ecosystem (PBI Service)

Interface of Power BI service



The screenshot shows the Power BI service interface with various UI elements highlighted by blue arrows and boxes:

- OFFICE 365 APP LAUNCHER**: Email, OneDrive, Calendar, etc.
- NAVIGATION PATH**: Highlights the active workspace, app, report or dashboard.
- WORKSPACE OPTIONS**: Change view, update settings, manage access & search.
- SETTINGS MENU**: Quick links for settings, help feedback, downloads etc.
- NAVIGATION PANE**: Key Power BI views, including Favorites, Apps, Workspaces, etc.
- CONTENT CANVAS**: Displays all your datasets, reports, dashboards, and workbooks, ...

The interface includes a top navigation bar with "Power BI service" selected, a search bar, and workspace management buttons. The left sidebar contains a navigation pane with options like Home, Create, Browse, OneLake data hub, Apps, Metrics, Monitoring hub, Deployment pipelines, Learn, Workspaces, and Power BI service. The main content area is a large white space with a central placeholder for content.

Introduce PBI Ecosystem (PBI Service)



- **List view**
- Lineage view

Introduce PBI Ecosystem (PBI Service)

List view



The items are arranged in a list

My workspace

+ New ▾ Upload ▾ Workspace settings

Filter by keyword Filter ▾

List view (highlighted with a red box)

□	Name	Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity
☒	Artificial Intelligence Sample	Dataset	Data Analytics Master...	5/9/23, 4:38:35 PM	N/A	—	—
⌚	Channel analysis	Dashboard	Data Analytics Master...	—	—	—	—
📊	Competitive Marketing Analysis	Report	Data Analytics Master...	5/9/23, 3:41:57 PM	—	—	—
☒	Competitive Marketing Analysis	Dataset	Data Analytics Master...	5/9/23, 3:41:57 PM	N/A	—	—
☒	Contoso Lookup Tables	Dataset	Data Analytics Master...	5/10/23, 10:16:12 AM	N/A	—	—
⌚	Contoso Lookup Tables.xlsx	Dashboard	Data Analytics Master...	—	—	—	—
📊	Contoso_07-09_MDA_Ver1_Exploration	Report	Data Analytics Master...	9/19/22, 8:53:06 PM	—	—	—
☒	Contoso_07-09_MDA_Ver1_Exploration	Dataset	Data Analytics Master...	9/19/22, 8:53:06 PM	N/A	—	—
📊	Corporate Spend	Report	Data Analytics Master...	5/9/23, 3:58:18 PM	—	—	—
☒	Corporate Spend	Dataset	Data Analytics Master...	5/9/23, 3:58:18 PM	N/A	—	—
📊	Employee Hiring and History	Report	Data Analytics Master...	5/9/23, 5:54:46 PM	—	—	—
☒	Employee Hiring and History	Dataset	Data Analytics Master...	5/9/23, 5:54:46 PM	N/A	—	—
⌚	Procurement Analysis Sample	Dashboard	Data Analytics Master...	—	—	—	—

Introduce PBI Ecosystem (PBI Service)



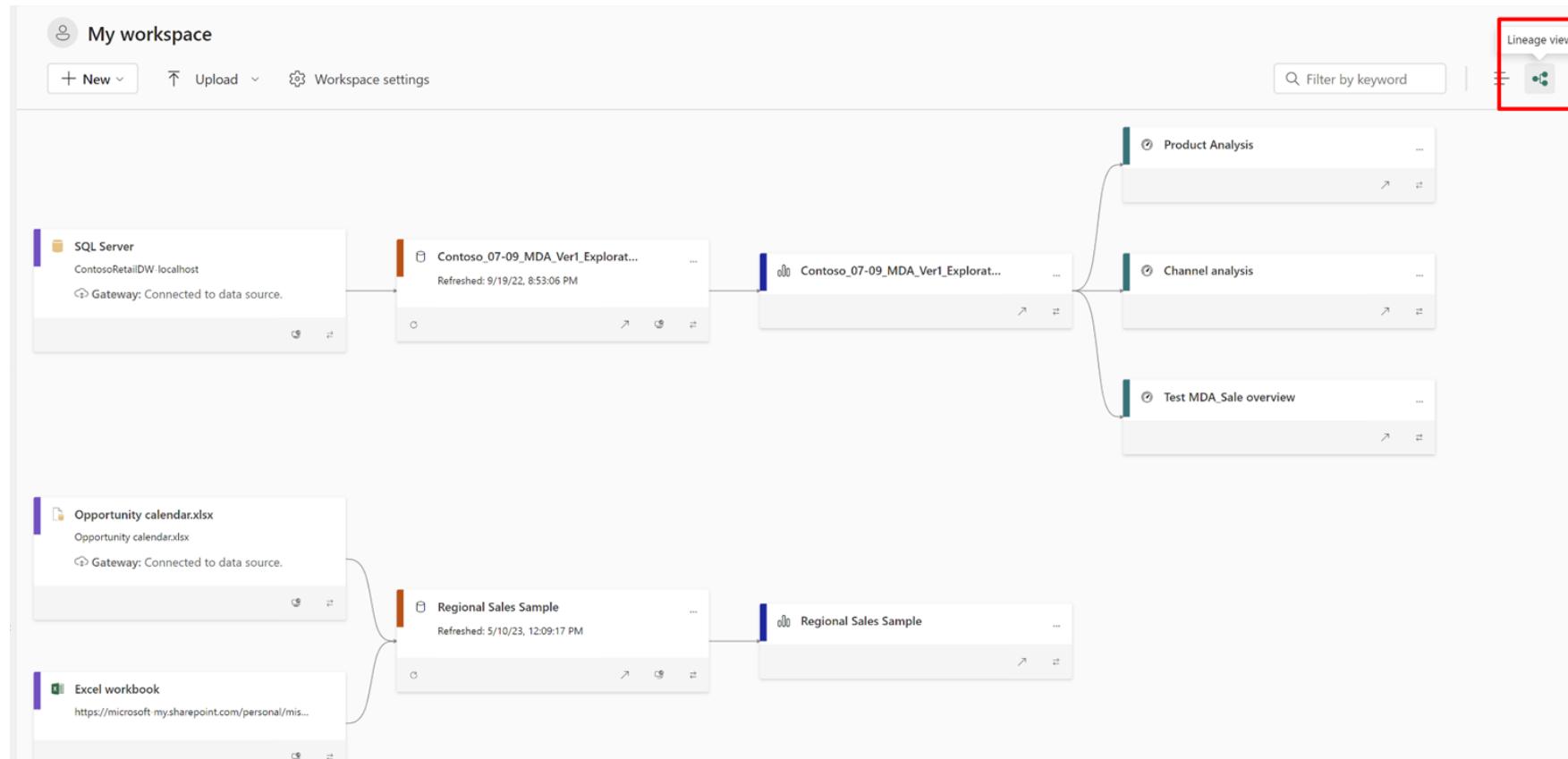
- List view
- **Lineage view**

Introduce PBI Ecosystem (PBI Service)

Lineage view



Lineage view shows how data is linked across multiple data sources & dependencies



Introduce PBI Ecosystem (PBI Service)

Data Lineage



Lineage view shows how data is linked across multiple data sources & dependencies

List View

The screenshot shows the Power BI List View interface. At the top, there's a navigation bar with 'Maven Analytics' and buttons for '+ New', 'Content' (which is selected), and 'Datasets + dataflows'. Below this is a table with columns: Name, Type, Owner, Refreshed, Next refresh, Endorsement, and Sensitivity. Three items are listed:

Name	Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity
Los Angeles Restaurant Inspections	Dashboard	Maven Analytics	—	—	—	—
Los Angeles Restaurant Inspections	Report	Maven Analytics	1/10/21, 7:29:59 PM	—	—	—
Restaurant Inspections	Report					

To the right of the table, there's a 'List' button in a dropdown menu, which is highlighted with a blue box. A large blue arrow points from this button down to a 'Lineage View' window. This window displays a flowchart of data lineage, starting with four data sources at the bottom (all labeled 'Text/CSV') and connecting them to a single report item at the bottom right. The report item has a yellow border, indicating it is the target of the lineage link.

Lineage View

Introduce PBI Ecosystem (PBI Service)

Data Lineage



Data lineage refers to the flow of data from a data source to a report and dashboard

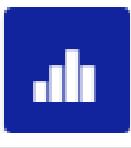


Datasets

Data sources you've connected to

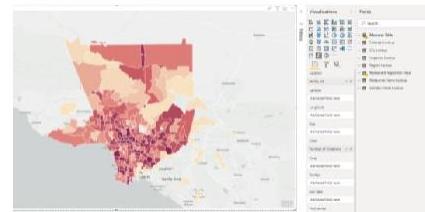


Google Analytics



Reports

Visuals built from a single dataset



Dashboards

Reports & tiles built from multiple datasets



Introduce PBI Ecosystem (PBI Service)

Interface of Power BI service

A screenshot of the Power BI OneLake data hub interface. The left sidebar shows navigation options like Home, Create, Browse, and OneLake data hub, which is highlighted with a red box. The main area is titled "OneLake data hub" and contains a message: "Discover, manage, and use data from across your org. [Learn more about OneLake data hub](#)". Below this are three filter buttons: "All", "My data", and "Endorsed in your org". The central part of the screen is the "Explorer" view, which lists data items with columns for Name and Type. A red box highlights the "Type" column, showing entries such as Dataset, Dataset (default), Datamart, Dataset, Dataset (default), Datamart, Dataset, Dataset, Dataset, Dataset (default), and Dataset (default).

Name	Type
Untitled Scorecard	Dataset
SQL	Dataset (default)
SQL	Datamart
Opportunity Analysis Sample	Dataset
Prediction report for mda_1[mda_1]	Dataset
Datamart2	Dataset (default)
Datamart2	Datamart
movie project	Dataset
Datamart3	Datamart
Datamart3	Dataset (default)
Datamart2	Dataset (default)

The OneLake data hub makes it easy to find, explore, and use the Fabric data items in your organization that you have access to.

In PBI service, it concludes **Datamarts and Datasets**

Introduce PBI Ecosystem (PBI Service) Workspace



There are two types of workspaces in Power BI Service: **My Workspace** & **Workspaces**

My Workspace

- **Personal workspace** for a single user (Free or paid license)
- **Only you** can access its content (can't collaborate with others)
- Content can be shared with **individual Pro/PPU users** (shared with me)
- Contains core **building blocks** (datasets, workbooks, reports, and dashboards)

Workspaces

- **Shared workspace** for many users (with paid licenses)
- **Multiple users** can access & collaborate on content
- Content can be created & shared **across your organization**
- Contains core **building blocks** (datasets, workbooks, reports, and dashboards) plus **dataflows**

Introduce PBI Ecosystem (PBI Service)

Workspace



The screenshot shows two workspace panes side-by-side. On the left is the 'My workspace' pane, which has a header with a user icon and the title 'My workspace'. It includes a navigation bar with '+ New' and 'Upload' buttons. Below this are seven items: Report, Paginated report, Scorecard, Dashboard, Dataset, and Streaming dataset. On the right is the 'MDA_training' workspace, also with a user icon and title. It has a similar navigation bar. Below are ten items: Report, Paginated report, Scorecard, Dashboard, Dataset, Dataflow, Datamart (Preview), Streaming dataset, and Streaming dataflow. A double-headed arrow is positioned between the two panes, indicating they are interconnected. A large curly brace on the right side groups both panes under the heading 'In My workspace and Workspace:'.

Category	Report Type	Description
My workspace and Workspace	Report	Visualize your data
	Paginated report	Build a paginated report
	Scorecard	Track related metrics together
	Dashboard	Build a single-page data story
	Dataset	Create a dataset to use in a report
	Streaming dataset	Build visuals from real-time data
	Report	Visualize your data
	Paginated report	Build a paginated report
	Scorecard	Track related metrics together
	Dashboard	Build a single-page data story

In **My workspace** and **Workspace**:

- Report, Paginated report, Scorecard, Dashboard, Dataset, Streaming dataset
- Upload & + New

Introduce PBI Ecosystem (PBI Service) Workspace



MDA_Training

+ New ▾ Upload ▾ Create deployment pipeline

Name	Type
Google Analytics_MDA	Report

In each block, there will be additional options.

- Reports**
 - Analyze in Excel
 - Delete
 - Quick Insights
 - Save a Copy (Pro)
 - Settings
 - View Usage Metrics
 - View Lineage
 - Create paginated report
 - Manage permissions (Pro)
- Dashboards**
 - Delete
 - Settings
 - View usage metrics report (Pro)
 - View Lineage
 - Manage permissions
- Workbooks**
 - Refresh now
 - Edit
 - Replace file
 - Settings
 - Delete
- Paginated report**
 - Edit in Power BI Report Builder
 - Delete
 - Save a copy
 - Manage
 - Settings
 - View lineage
 - Manage permissions
- Scorecard**
 - Analyze in Excel
 - Delete
 - Settings
 - View Lineage
 - View usage metrics report
 - Manage permissions

Introduce PBI Ecosystem (PBI Service) Workspace



The screenshot shows the Power BI Service workspace interface. At the top, there's a header with a search bar and navigation links. Below the header, a list of items is displayed in a table format:

Name	Type
MDA_test	Dashboard
MDA_test	Scorecard
Regional Sales Sample	Report
salary	Workbook

A context menu is open over the first item, "MDA_test". The menu items are:

- Share** – Reports & Dashboards with colleagues & coworkers
- Favorite** – Add selected report or dashboard to Favorites
- More** – Contextual menu with additional settings & options

A curly brace on the right side of the menu groups the three items under the heading "Dashboard, Scorecard, Report".

Introduce PBI Ecosystem (PBI Service) Workspace



A screenshot of the Power BI service workspace interface. At the top, there are buttons for '+ New', 'Upload', and 'Workspace settings'. Below is a table with columns 'Name' and 'Type'. A dataset named 'Artificial Intelligence Sample' is listed. A context menu icon (three dots) is highlighted with a blue box. A blue arrow points from this icon to the 'More' option in the 'Datasets' section on the right.

Datasets

- Refresh Now** - Refresh underlying source data
- Scheduled Refresh** – Set automated refresh schedule
- More** – Contextual menu with additional settings & options

A screenshot of the MDA_Training workspace. It has a similar header and table structure to the first screenshot. A dataset named 'Contoso Lookup Tables' is listed, and its context menu icon is highlighted with a blue box, mirroring the action shown in the first screenshot.

Streaming dataset

- Delete
- Manage permissions
- Quick insights
- Edit
- API info

- In my workspace & workspace: streaming dataset & dataset

Datasets

- Analyze in Excel
- Create Report
- Auto - create report
- Create paginated report
- Delete
- Quick Insights
- Security
- Rename
- Settings
- Manage Permissions
- View Lineage

Introduce PBI Ecosystem (PBI Service)

Workspace functions



The screenshot shows two separate Power BI workspaces: "My workspace" and "MDA_Training". Both workspaces have identical interfaces with a header containing "New", "Upload", "Workspace settings", a search bar ("Filter by keyword"), a "Filter" button, and a list view icon. The "My workspace" section displays two items: "Artificial Intelligence Sample" (Dataset) and "Channel analysis" (Dashboard). The "MDA_Training" section displays one item: "datamartpro" (Dataset). A large blue double-headed arrow is positioned between the two workspace sections, indicating they are interconnected or share a common feature set. A blue bracket on the right side groups the "Filter by keyword", "Filter", and list view icons from both workspaces, with a callout text pointing to it.

Name	Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity
Artificial Intelligence Sample	Dataset	Data Analytics Master...	5/9/23, 4:38:35 PM	N/A	—	—
Channel analysis	Dashboard	Data Analytics Master...	—	—	—	—

Name	Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity
datamartpro	Dataset (default)	MDA_Training	5/24/23, 11:27:07 AM	N/A	—	—

Both workspaces:
Filter by keyword,
Filter, List view,
Lineage view

Introduce PBI Ecosystem (PBI Service)

Workspaces



My workspace

+ New ▾ ⌂ Upload ▾

- Report
Visualize your data
- Paginated report
Build a paginated report
- Scorecard
Track related metrics together
- Dashboard
Build a single-page data story
- Dataset
Create a dataset to use in a report
- Streaming dataset
Build visuals from real-time data

MDA_Training

+ New ▾ ⌂ Upload ▾

- Report
- Paginated report
- Scorecard
- Dashboard
- Dataset
- Dataflow
- Datamart (Preview)
- Streaming dataset
- Streaming dataflow

Show all



In Workspace: Dataflow,
Datamart, Streaming dataflow
(not in My workspace)

Introduce PBI Ecosystem (PBI Service) Workspace



- **Dataflow**
- Datamart
- Streaming dataflow (pending)

Introduce PBI Ecosystem (PBI Service)

Workspace (normal)



MDA_Training

+ New ▾ Upload ▾ Create deployment pipeline Create app Manage a...

Name	Type	Owner
data_flow	Dataflow	Data Analytics Master...
Google Analytics_MDA	Report	MDA_Training

- Additional settings
- Dataflows (Pro)**
- Delete
 - Edit
 - Export .json
 - Properties
 - Refresh History
 - Settings
 - View Lineage

Dataflow



Refresh Now - Refresh underlying source data



Scheduled Refresh – Set automated refresh schedule



More – Contextual menu with additional settings & options

Introduce PBI Ecosystem (PBI Service) Workspace



- Dataflow
- **Datamart**
- Streaming dataflow (pending)

Introduce PBI Ecosystem (PBI Service)

Workspaces Premium



Premium workspace

MDA_Training

+ New Upload Create deployment pipeline Create

Name	Type
MDADatamart	Datamart

Datamarts (Previews) Premium

- Share** – Datamart with colleagues & co-workers
- Favorite** – Add selected datamart to Favorites
- More** – Contextual menu with additional settings & options

Additional settings

- Edit
- Open with
- Share
- Analyze in Excel
- New report
- Favorite
- Rename
- Delete
- Manage permissions
- Copy SQL server endpoint
- Setting
- Refresh
- View lineage

Introduce PBI Ecosystem (PBI Service) Workspace



My workspace

+ New ▾ Upload ▾ Workspace settings

Filter by keyword Filter

Name	Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity
Artificial Intelligence Sample	Dataset	Data Analytics Master...	16:38:35 9/5/23	N/A	—	—
Channel analysis	Dashboard	Data Analytics Master...	—	—	—	—

MDA_Training

+ New ▾ Upload ▾ Create deployment pipeline Create app Manage access ...

Filter by keyword Filter

Name	Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity	Included in app
Google Analytics_MDA	Report	MDA_Training	09:19:55 24/5/23	—	—	—	<input checked="" type="checkbox"/> No
Google Analytics_MDA	Dataset	MDA_Training	09:19:55 24/5/23	N/A	—	—	<input type="checkbox"/> Yes
Google Analytics_MDA.pbix	Dashboard	MDA_Training	—	—	—	—	<input checked="" type="checkbox"/> Yes

Create deployment pipeline, Create App, Manage access

Introduce PBI Ecosystem (PBI Service)

Workspace access

A screenshot of the Power BI 'Manage access' dialog box for a workspace named 'MDA_Training'. The dialog box includes a search bar, a list of users, and a 'Add people or groups' button. A blue arrow points from the explanatory text below to the 'Add people or groups' button.

MDA_Training

+ New ▼

Upload ▼

Create deployment pipeline

Create app

Manage access

...

Manage access

MDA_Training

+ Add people or groups

Search within workspace

DA Data Analytics Mastering ⓘ
Admin

If you have an admin role in a workspace, you can give others access to it by adding them to the different roles.

Introduce PBI Ecosystem (PBI Service)

Workspace settings



The screenshot shows two side-by-side interfaces for managing Power BI workspaces.

Left Interface: Workspace settings (License mode selection)

- Premium** (selected)
- System Storage**
- Power BI** (with expand/collapse arrow)
- Embed codes**
- Data Engineering/Science** (with expand/collapse arrow)
- Spark compute**
- Library management**

Choose a license

License mode

- Pro**: Select Pro to use basic Power BI features and collaborate on reports, dashboards, and scorecards. To access a Pro workspace, users need Pro per-user licenses. [Learn more](#)
- Premium capacity**: Select premium capacity if the workspace will be hosted in a premium capacity. When you share, collaborate on, and distribute Power BI and Microsoft Fabric content, users in the viewer role can access this content without needing a Pro or Premium per-user license. [Learn more](#)
- Embedded**: Select embedded if the workspace will be hosted in an Azure embedded capacity. ISVs and developers use Power BI Embedded to embed visuals and analytics in their applications. [Learn more](#)
- Fabric capacity**: Select Fabric capacity if the workspace will be hosted in a Microsoft Fabric capacity. With Fabric capacities, users can create Microsoft Fabric items and collaborate with others using Fabric features and experiences. Explore new capabilities in Power BI, Data Factory, Data Engineering, and Real-Time Analytics, among others. [Learn more](#)
- Trial**: Select the free trial per-user license to try all the new features and experiences in Microsoft Fabric for 60 days. A Microsoft Fabric trial license allows users to create Microsoft Fabric items and collaborate with others in a Microsoft Fabric trial capacity. Explore new capabilities in Power BI, Data Factory, Data Engineering, and Real-Time Analytics, among others. [Learn more](#)

Buttons: Apply, Cancel

Right Interface: Workspace settings (General configuration)

- About**
- Premium**
- Azure connections**
- System Storage**
- Git integration**
- Other**
- Power BI** (with expand/collapse arrow)
- Data Engineering/Science** (with expand/collapse arrow)

Workspace image

Name: MDA_Training

Description: Describe this workspace (Optional)

Domain (preview): Assign to a domain (optional)

Contact list: Enter users and groups

Workspace OneDrive: (Optional)

My workspace

Workspaces

Introduce PBI Ecosystem (PBI Service)

Creating Workspace



Create a new workspace and assign it to a **premium capacity** in the advanced options

New icon indicates a **Premium Per User workspace**

Create a workspace

Specific users and groups

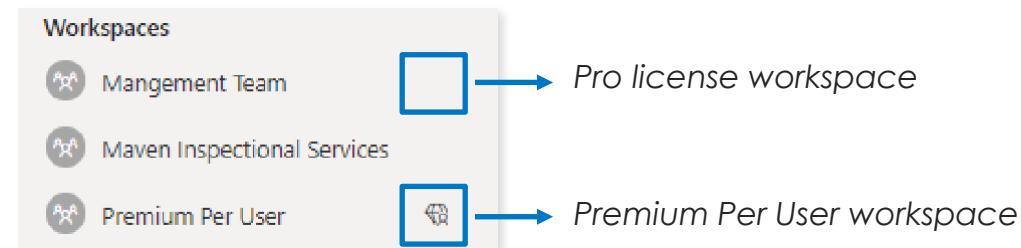
Workspace OneDrive

License mode Pro (selected)
 Premium per-user (highlighted with a red box)
 Premium capacity
 Embedded (Optional)

Develop a template app

Template apps are developed for sharing outside your organization.
A template app workspace will be created for developing and releasing the app. [Learn more](#)

Security settings
 Allow contributors to update the app for this workspace



HEY THIS IS IMPORTANT!

Datasets, reports, or dashboards that are created within Power BI Premium Per User workspaces can only be consumed by users that also have Premium Per User licenses

Introduce PBI Ecosystem (PBI Service)

Creating Workspace



The screenshot illustrates the workflow for creating a new workspace in the Power BI Service. It consists of three main panels:

- Left Panel (Home Screen):** Shows the "Workspaces" section with a search bar and two entries: "My workspace" and "Marketing Department_MDA". A red box highlights the green "+ New workspace" button at the bottom.
- Middle Panel (Create a workspace):** A form titled "Create a workspace" with fields for "Workspace name" (containing "Marketing Department_MDA") and "Description". A red box highlights the "Name this workspace" input field.
- Right Panel (Success Screen):** Shows the "Marketing Department_MDA" workspace listed in the "Workspaces" section of the home screen. A red box highlights the workspace name in the title bar and the workspace thumbnail in the list.

Blue arrows indicate the flow from the "+ New workspace" button to the "Create a workspace" form, and from the newly created workspace back to the home screen.



POWER BI SERVICE

PART 1: Introduce PBI Ecosystem (PBI Service) **PART 5: Report and Dashboard**

PART 2: Connecting data

PART 3: Prep Data (On Pro & Premium)

PART 4: Data Modeling

PART 6: Refresh Scorecard & Metrics

PART 7: Sharing, Collaboration, (PBI Mobile)

PART 8: Deployment Pipelines





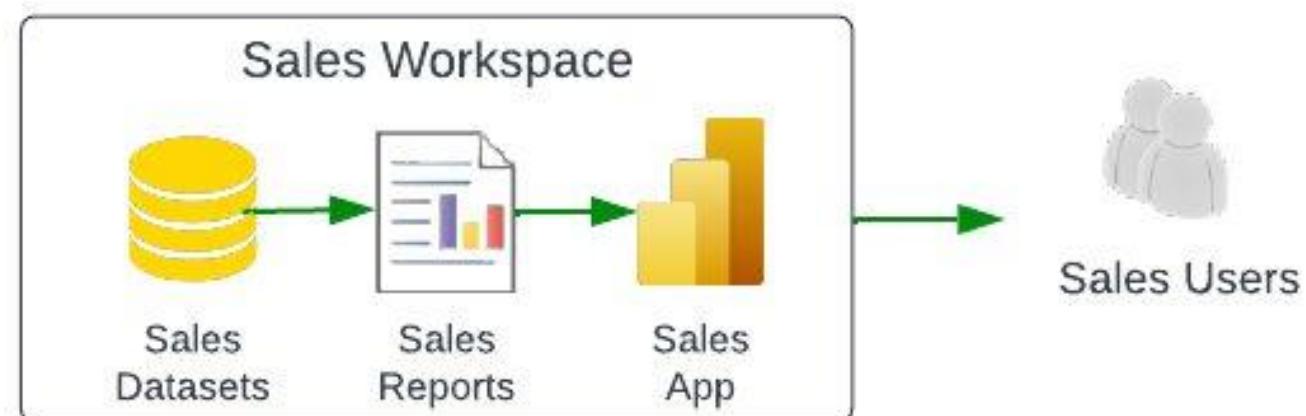
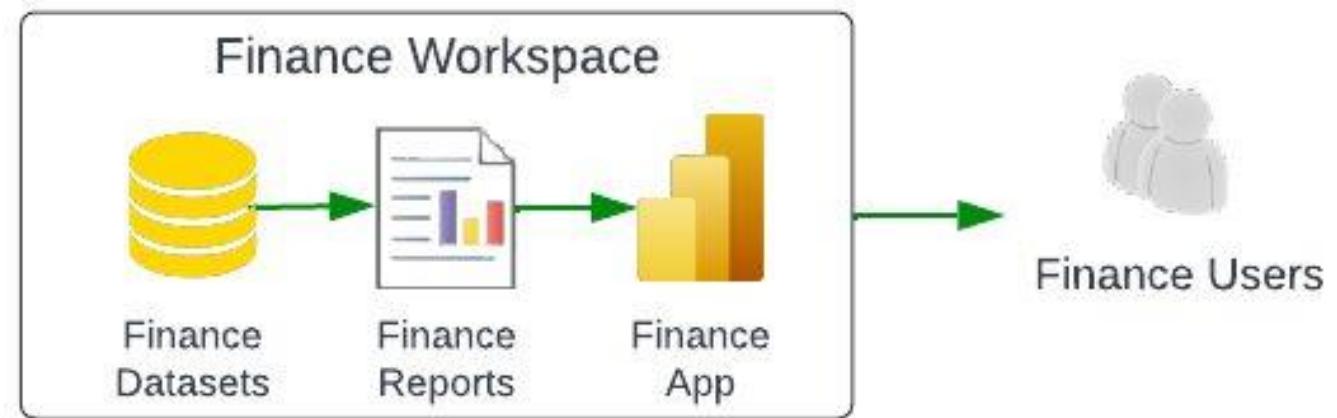
On My Workspace & Workspaces (Pro, Premium): We practice to load data.

- From Dataset: Excel table, CSV, manual input.
- From Upload: Excel sheet, pbix, rld.
- From Streaming Dataset: API, PubNub, Azure Stream
- **From Dataflow (Not available in My Workspace)**
- **From Datamart (Not available in My Workspace)**
- **From Streaming Dataflow (pending)**

Connecting data



MASTERING DATA ANALYTICS





On My Workspace & Workspaces (Pro, Premium): We practice to load data.

- **From Dataset: Excel table, CSV, manual input. => Dataset**
- From Upload: Excel sheet (=>Workbook), pbix, rld.
- From Streaming Dataset: API, PubNub, Azure Stream
- From Dataflow (Not available in My Workspace)
- From Datamart (Not available in My Workspace)
- From Streaming Dataflow (pending)

Connecting data

Dataset from Excel



My workspace

+ New ▾ Upload ▾

- Report
- Paginated report
- Scorecard
- Dashboard
- Dataset**
- Streaming dataset

Add data to start building a report

Excel

CSV

Paste or manually enter data

Don't see the source you're looking for? Download the desktop app.

Select a file

My files

Quick access

As you open files from shared libraries, they'll appear in this Quick access list.

More places...

Open

File name: Microsoft Excel Worksheet

Import Cancel

Browse this device

A screenshot of the Power BI 'Add data' interface. The 'Excel' button is highlighted with a red box. Below the interface, a file selection dialog is shown, with an arrow pointing from the 'Browse this device' button in the interface to the 'Desktop' folder in the dialog. Another arrow points from the 'Open' button in the dialog back to the 'Open' button in the interface. The file 'DataModel_Tables.xlsx' is selected in the dialog.

Connecting data

Dataset from Excel



Result

My workspace

+ New Upload Workspace settings

	Name	Type
	DataModel_Tables	Workbook
	DataModel_Tables	Dataset
	DataModel_Tables.xlsx	Dashboard

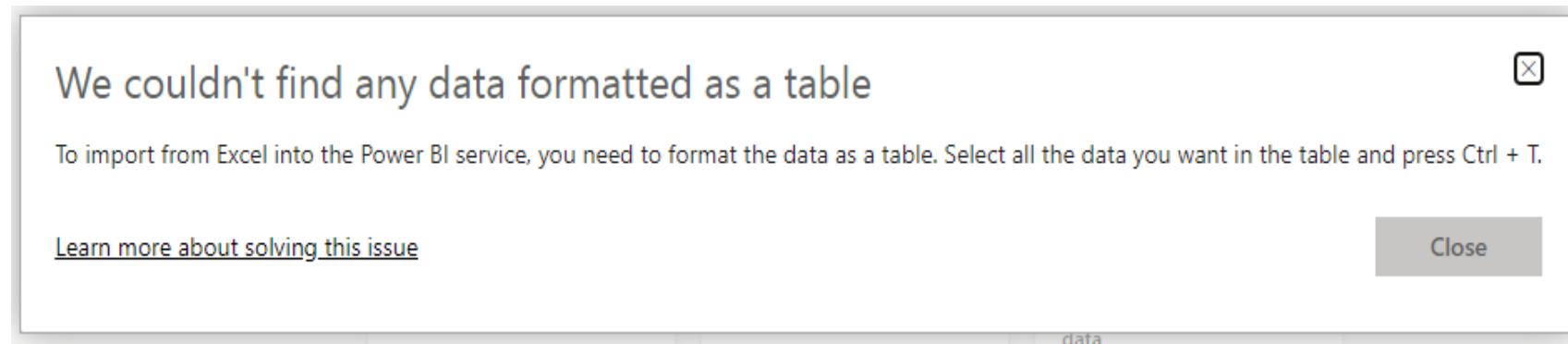
HEY THIS IS IMPORTANT!

When you connect your Excel file through Dataset, Power BI will search for data formatted as a **table** and create a new **Dataset** in your workspace, NOT a new **Workbook**



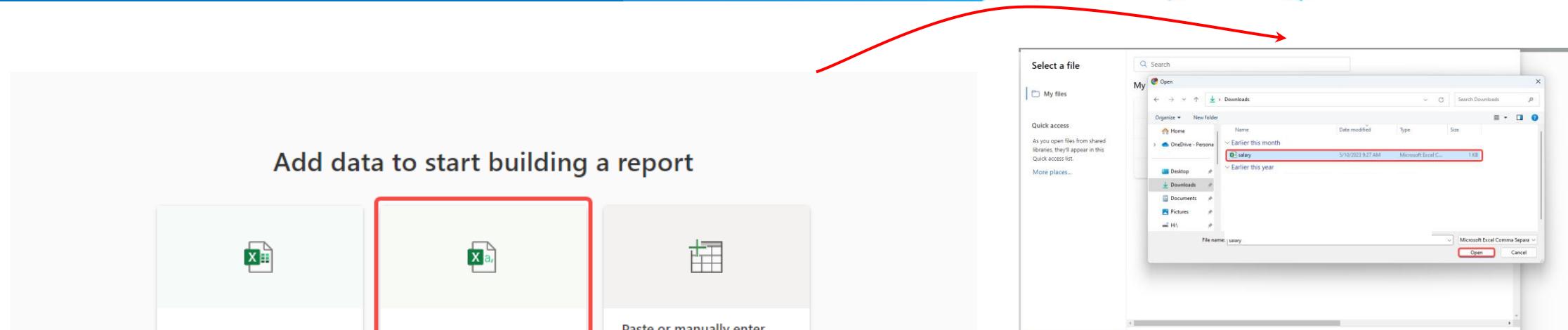
Remember, your file must include at least one table!

If you load a Excel file which has not a table:



Connecting data

Dataset from CSV



Don't see the source you're looking for? Download the desktop app.

A screenshot of the Power BI service showing the "MDA_Training" dataset. The top navigation bar includes "New", "Upload", "Create deployment pipeline", "Create app", and "Manage". The main area is a table listing datasets:

	Name	Type	Owner
Google Analytics_MDA	Report	MDA_Training	
Google Analytics_MDA	Dataset	MDA_Training	
Google Analytics_MDA.pbix	Dashboard	MDA_Training	
MDA	Dataset	MDA_Training	
MDA_testing	Dataflow	Data Analytics Master...	
MDADatamart	Dataset (default)	MDA_Training	
MDADatamart	Datamart	Data Analytics Master...	
salary	Dataset	MDA_Training	

Connecting data

Dataset from manual input



The screenshot shows the Power BI interface. On the left, there's a card titled "Add data to start building a report" with three options: "Excel", "CSV", and "Paste or manually enter data". A red arrow points from the "Paste or manually enter data" button to the "Enter data" screen on the right. The "Enter data" screen has a table with one row and two columns. The first column is labeled "ABC" and "123", and the second column is labeled "Column1". The "Name" field contains "Table" and the "Create a dataset only" dropdown is set to "Create a dataset only".

Add data to start building a report

Excel CSV Paste or manually enter data

Don't see the source you're looking for? Download the desktop app.

Power Query

Enter data

Copy and paste data into the table, or enter data manually. Be sure the data type matches the values in each column. [Learn more](#)

Use first row as headers

ABC 123	Column1
1	
+	

Name

Table

Create a dataset only

Create a dataset only Auto-create report Create a blank report



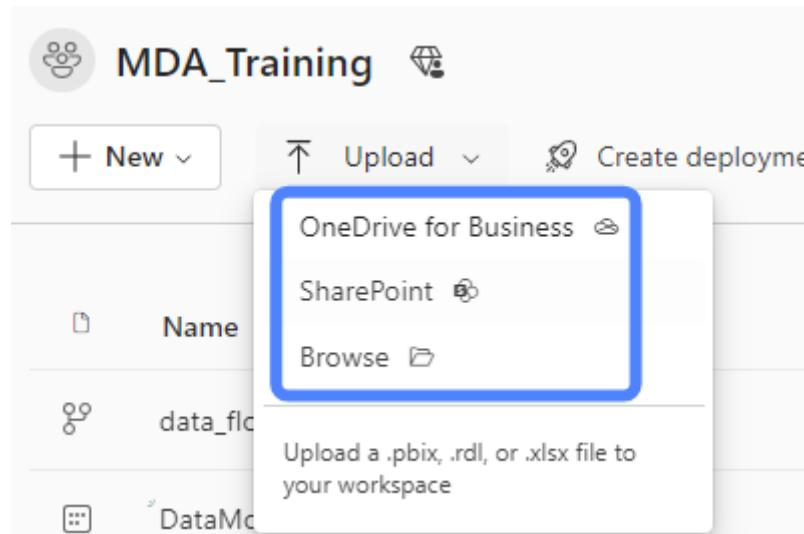
On My Workspace & Workspaces (Pro, Premium): We practice to load data.

- From Dataset: Excel table, CSV, manual input. => Dataset
- **From Upload: Excel sheet (=>Workbook), pbix, rld.**
- From Streaming Dataset: API, PubNub, Azure Stream
- From Dataflow (Not available in My Workspace)
- From Datamart (Not available in My Workspace)
- From Streaming Dataflow (pending)

- **From Upload: Excel sheet (=>Workbook), pbix, rdl.**

Browse (Local file)
SharePoint
OneDrive for Business

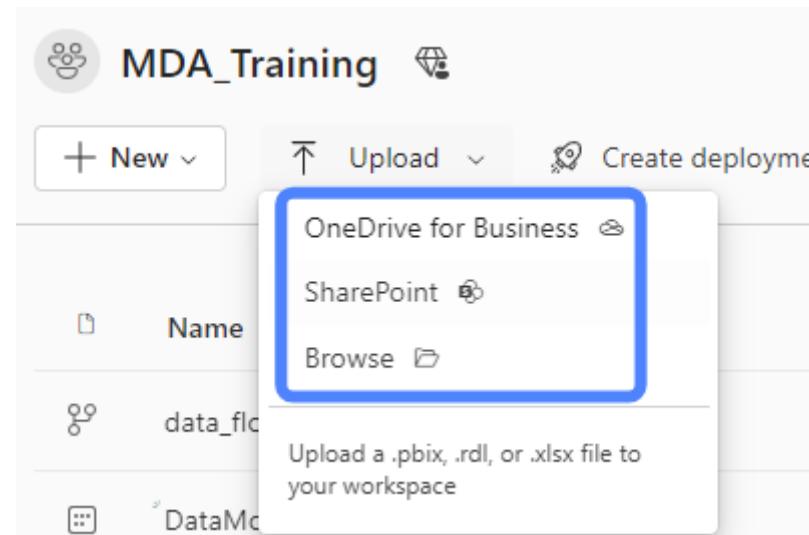
Workbook



- From Upload: Excel sheet (=>Workbook), pbix, rdl.

Browse (Local file)
SharePoint
OneDrive for Business

Workbook



Connecting data

Upload file from local file



The screenshot illustrates the process of uploading a local Excel file to a Power BI workspace.

Left Panel (MDA_Training workspace):

- The "Upload" button is highlighted with a blue box.
- A dropdown menu shows options: OneDrive for Business, SharePoint, and a "Browse" option, which is also highlighted with a blue box.
- A tooltip at the bottom says: "Upload a .pbix, .rdl, or .xlsx file to your workspace".

Top Center (File Explorer):

- An "Open" dialog is open, showing files on the D:\ drive.
- The file "DataModel_Tables.xlsx" is selected and highlighted with a blue box.
- Other files listed are "CaseStudy_Merge_Query.xlsx" and "DataModel_Tables.csv".

Right Panel (My workspace):

- The uploaded file "DataModel_Tables.xlsx" is visible in the workspace.
- The "Type" column indicates it is a "Workbook".
- Other items in the workspace include "DataModel_Tables" (Dataset) and "DataModel_Tables.csv" (Dashboard).

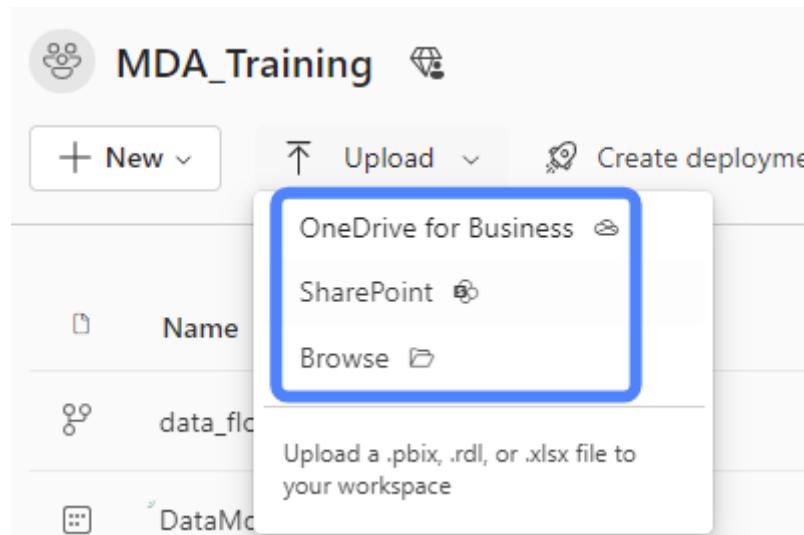
Bottom Text:

Workbook is a special dataset, you can not create a report from it

- **From Upload: Excel sheet (=>Workbook), pbix, rdl.**

Browse (Local file)
SharePoint
OneDrive for Business

} Workbook



Connecting data

Upload file from Sharepoint



The screenshot illustrates the process of uploading a file from SharePoint into a Power BI workspace. The main interface shows the "My workspace" screen with a "Content" tab selected. A modal window titled "Select a file" is open, showing a list of files in "My files". A file named "salary.xlsx" is selected. A large blue arrow points from the "salary.xlsx" entry in the modal to the "Upload" button in the Power BI workspace header. Another blue arrow points from the "Upload" button in the workspace header down to the "Upload" section in the modal window.

My workspace

+ New ▾ Upload ▾

Upload a .pbix, .rdl, or .xlsx file to your workspace

OneDrive for Business

SharePoint

Browse

Select a file

My files

Quick access

Search

Documents

Name Modified Modified By

salary.xlsx

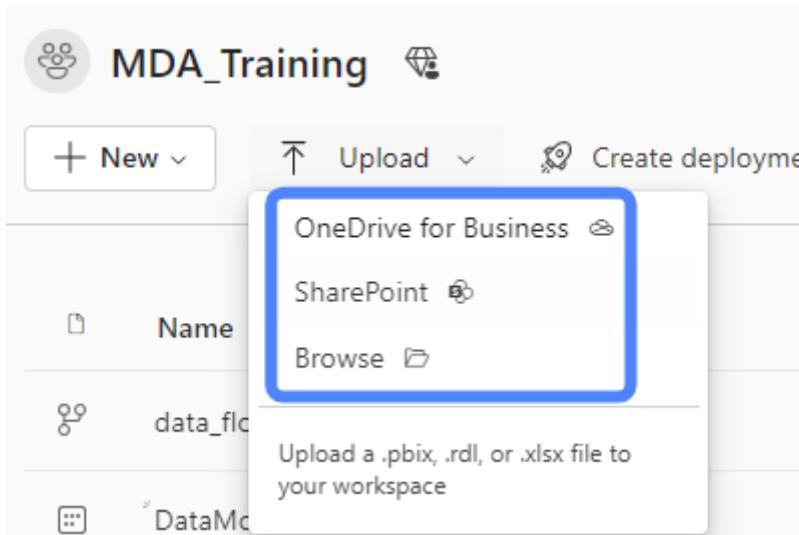
Find a library with a URL

Upload Cancel

All Content Datasets + dataflows

Name	Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity
salary	Workbook	My workspace	09:59:55 4/5/23	—	—	—

- From Upload: Excel sheet (=>Workbook), pbix, rdl.
- Browse (Local file)
- SharePoint
- OneDrive for Business



Connecting data

Upload file from OneDrive for Business



The screenshot illustrates the process of uploading a file from OneDrive for Business into a Power BI workspace.

Top Navigation: The top navigation bar includes '+ New' and 'Upload' dropdown menus.

Upload Dialog: A modal dialog titled 'Select a file' is open, showing the 'My files' section. It includes a search bar and a list of files. The 'OneDrive for Business' option is highlighted with a blue box and an arrow pointing to it from the main workspace area.

File List: The main workspace shows a list of datasets. The 'Content' tab is selected. A table lists datasets with columns: Name, Type, Owner, Refreshed, Next refresh, Endorsement, and Sensitivity. One dataset, 'salary', is listed as a Workbook owned by 'My workspace'.

Bottom Navigation: The bottom navigation bar includes 'View', 'Filters', and a 'Search' bar.

Name	Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity
salary	Workbook	My workspace	09:59:55 4/5/23	—	—	—

Connecting data

Upload file & Dataset



MASTERING DATA ANALYTICS

My workspace

+ New ▾ Upload Workspace settings

Name	Type
DataModel_Tables	Workbook
DataModel_Tables	Dataset
DataModel_Tables.xlsx	Dashboard

Through Dataset, Excel => Dataset

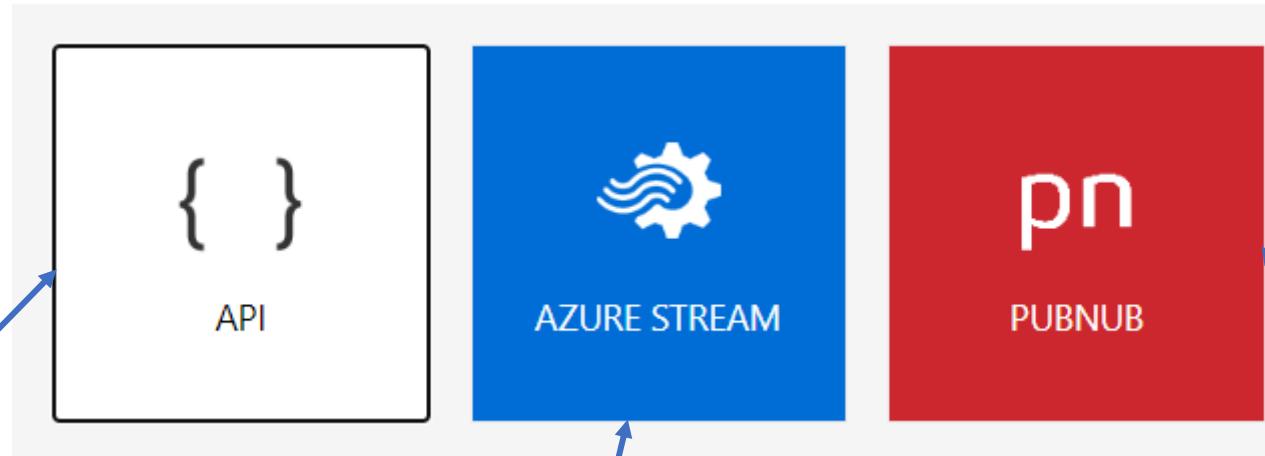
Through Upload, Excel => Workbook (not create REPORT)



On My Workspace & Workspaces (Pro, Premium): We practice to load data.

- From Dataset: Excel sheet, CSV, manual input. => Dataset
- From Upload: Excel sheet (table) (=>Workbook), pbix, rld.
- **From Streaming Dataset:** API, PubNub, Azure Stream
- From Dataflow (Not available in My Workspace)
- From Datamart (Not available in My Workspace)
- From Streaming Dataflow (pending)

Three ways to create a real-time streaming data feed

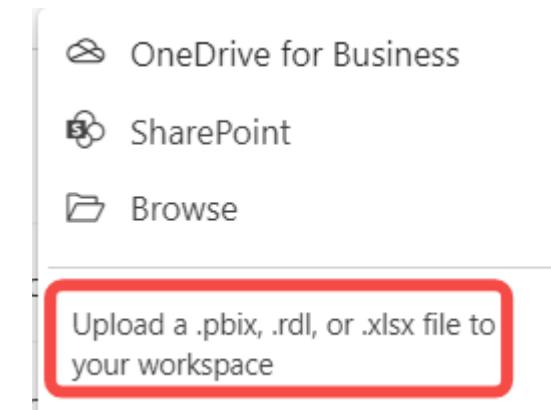
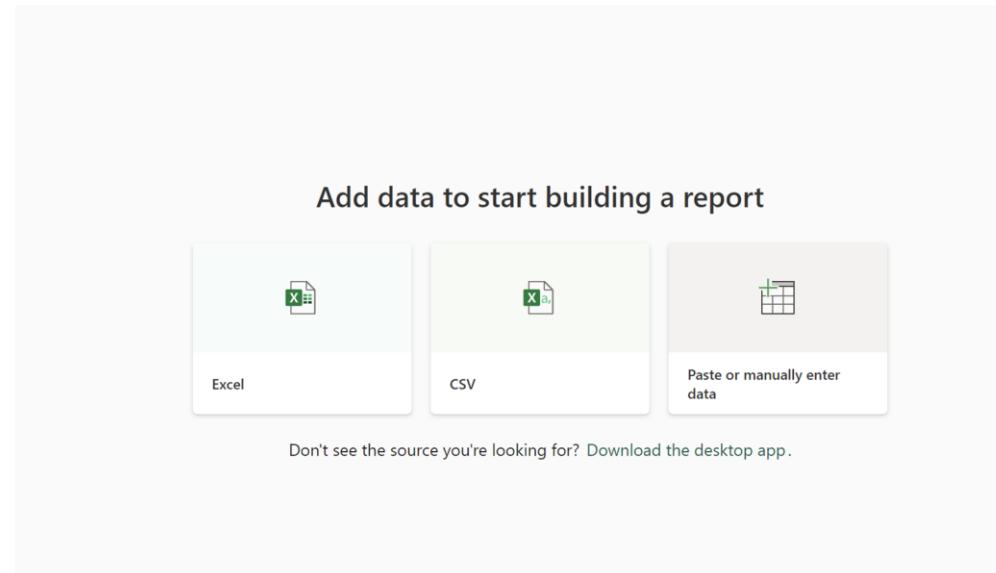


The Power BI REST API makes real-time streaming easier for developers

Use Power BI as an output for a Stream Analytics job to provide for a rich visualization experience of analysis results. Use this capability for operational dashboards, report generation, and metric-driven reporting.

The integration of PubNub streaming with Power BI helps you create and use your low-latency PubNub data streams in Power BI.

Connecting Data **from Dataset**, no. of connectors:
Excel Table; Excel Sheet; CSV; PBIX, RLD; Manual Input (No refresh),
streaming dataset





Connecting Data **from Dataset**, no. of connectors:
Excel Table; Excel Sheet; CSV; PBIX, RLD; Manual Input (No refresh),
streaming dataset.

Need to connect other sources?

=> Dataflow

Add data to start building a report

Excel CSV Paste or manually enter data

Don't see the source you're looking for? Download the desktop app.

OneDrive for Business

SharePoint

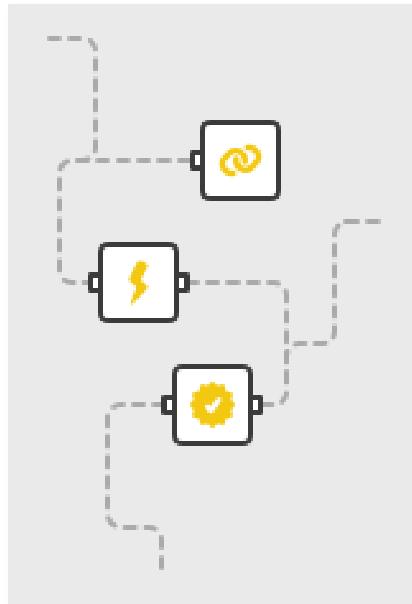
Browse

Upload a .pbix, .rdl, or .xlsx file to your workspace

On My Workspace & Workspaces Pro, Premium: We practice to load data.

- From Dataset: Excel table, Csv, manual input.
- From Upload: Excel sheet, pbix, rld.
- From Streaming Dataset: API, PubNub, Azure Stream
- **From Dataflow (Not available in My Workspace)**
- From Datamart (Not available in My Workspace)
- From Streaming Dataflow (pending)

Dataflows are queries that run *independently* within Power BI Service (Power Query in the cloud!) and are used to ingest, transform, store, and integrate data



Why Dataflows?

- ✓ Reuse queries across **multiple Power BI Desktop or Service reports**
- ✓ Run ETL (extract, transform & load) processes on **specific schedules**
- ✓ Create a centralized data warehouse to serve as a **single source of truth**

How are Dataflows Implemented?

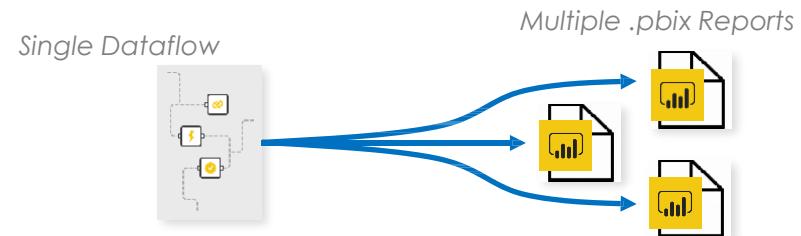
1. **Create** and **build** dataflows in Power BI Service
2. **Refresh dataflow** in Power BI Service
3. **Connect to a dataflow** as the dataset in Power BI Desktop

Prep data (On Pro & Premium) By Dataflow



USE CASE #1

- Need to use the same query across multiple reports? Create a **single dataflow** and connect to it as a data source, instead of creating a brand-new connection and replicating your applied steps each time



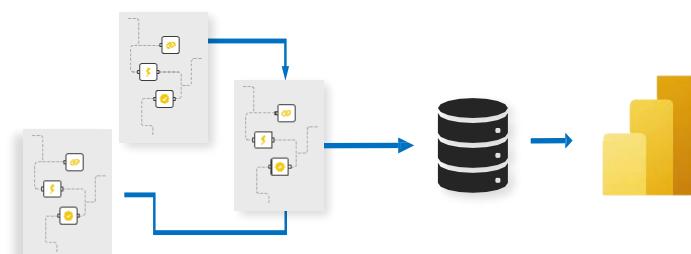
USE CASE #2

- For example, schedule one dataflow to refresh at **7 am** for your internal KPI report, and another to refresh **weekly** for your executive client dashboard

All	Content	Datasets + dataflows	
Name	Type	Refreshed	Next refresh
Violations	Dataflow	1/12/21, 10:01:05 PM	1/13/21, 7:00:00 AM

USE CASE #3

- Maintaining separate ETL processes across reports with the same data is tedious, inefficient, and error-prone
- Dataflows allow you to create, manage, and QA those processes in **one central place**

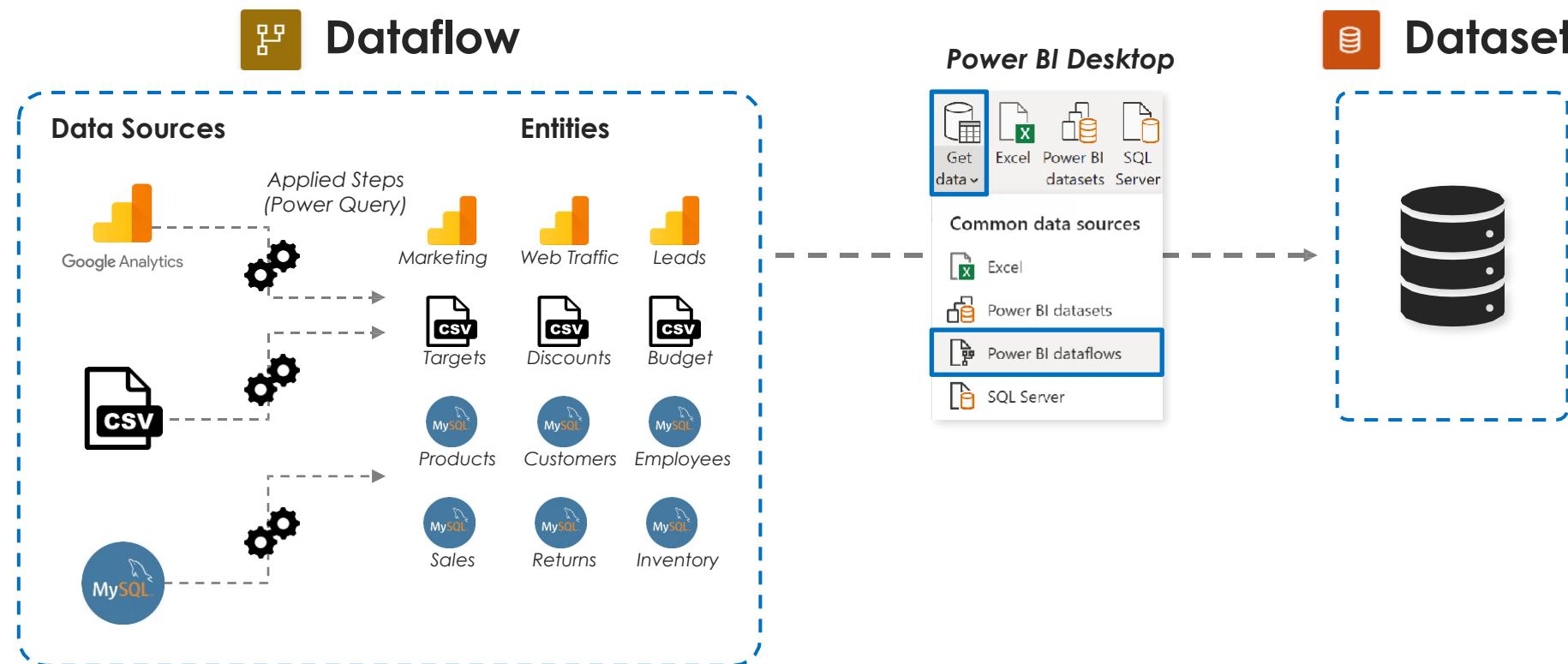


Prep data (On Pro & Premium) By Dataflow



Dataflows connect to raw **data sources**, apply a series of steps (Power Query), and store data as tables or **entities**

- You can connect to a dataflow from Desktop and publish to Service as a dataset



Connecting data

Dataflow



Marketing Department_MDA

+ New ▾ Upload ▾ Create app Manage access

- Report
- Paginated report
- Scorecard
- Dashboard
- Dataset
- Dataflow
- Streaming dataset

Prep, clean, and transform data.

Connecting data

Creating a new Dataflow



Start creating your dataflow

Define new tables

Choose a data source to define the tables for your dataflow. You can map your data to [standard Common Data Model](#) tables, or define custom tables instead.

[Learn more](#)

Add new tables

Link tables from other dataflows

Linking to tables from other dataflows reduces duplication and helps maintain consistency across your organization.

[Learn more](#)

Add linked tables

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

Connecting data

Dataflow (Define new tables)



Start creating your dataflow

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[Learn more](#)

Create and attach

Connecting data

Dataflow (Define new tables)



150+ sources Service vs 110+ sources Desktop

Choose data source

Select a connector or directly drag a file from your computer.

All categories	File	Database	Power Platform	Azure	Online services	Other	Search
Excel workbook	Text/CSV	XML	JSON	Folder	PDF	Parquet	SharePoint folder
Oracle database	IBM Db2 database	MySQL database	PostgreSQL database	Sybase database	Teradata database	SAP HANA database	SAP BW Application Server
Google BigQuery	Amazon Redshift	Impala	Vertica	Dataflows	Power BI dataflows (Legacy)	Dataverse	SAP BW Message Server
Azure Analysis Services	Azur Blobs	Azure Tables	Azure Data Explorer (Kusto)	Azure Data Lake Storage G...	Azure HDInsight (HDFS)	Azure HDInsight Spark	Common Data Service (Le...
Salesforce reports	Google Analytics	Adobe Analytics	Web API	Web page	SharePoint list	OData	Azure SQL database
Action	Amazon Athena	AtScale cubes	BI Connector	Data Virtuality LDW	Denodo	Dremio Cloud	Microsoft Exchange Online
Indexima	InterSystems IRIS	Jethro	Kyligence	Linkar PICK Style / M...	MariaDB	MarkLogic	Odyssey Database
Azure Cosmos DB v2	Azure Cost Management	Azure Databricks	Azure Synapse Analyt...	Azure Time Series Ins...	HDIInsight Interactive Query	Asana	TIBCO(R) Data Virtualization
Automy Data Analytics	CData Connect Cloud	Databricks	Digital Construction Work...	Dynamics 365 Business Ce...	Dynamics 365 Custo...	Emigo Data Source	Autodesk Construction Clo...
Hexagon PPM Smart® API	Industrial App Store	Intune Data Warehou...	Palantir Foundry	Planview Enterprise Archit...	Planview IdeaPlace	Planview Portfolios	Automation Anywhere
Quickbase	Smartsheet	SoftOne BI	TeamDesk	Viva Insights	Webtrends Analytics	Wittvio	Funnel
Amazon OpenSearch ...	Anaplan	BQE Core	BitSight Security Ratings	Bloomberg Data and Anal...	Celonis EMS	Cherwell	FactSet Analytics
EQuIS	Eduframe	FHIR	FactSet RMS	Google Sheets	Hive LLAP	Information Grid	Entersoft Business Su...
Microsoft Teams Pers...	OpenSearch Project	Paxata	QubolePresto	Roamler	SIS-CC SDMX	Jamf Pro	MicroStrategy for Power BI
SolarWinds Service D...	Solver	Starburst Enterprise	SumTotal	SurveyMonkey	Shortcuts Business In...	Kognitwin	Sitemprove
Zucchetti HR Infinity	Blank table	Blank query		Tenforce (SmartList)	Usercube	Vena	Socialbakers Metrics ...
Accounts, leads, opportunities	Lead to cash	Leads, opportunities	Quotes, orders, invoices				Wrike
Salesforce	Dynamics 365 Sales	Dynamics 365 Sales	Dynamics 365 Sales				
Online services	Online services	Online services	Online services				

Connecting data

Dataflow (Define new tables)



Power Query

Choose data source

Select a connector or directly drag a file from your computer.

All categories

File

Database

Power Platform

Azure

Online services

Other



Web API

Other

Connecting data

Dataflow (Define new tables)



Power Query

Connect to data source

Text/CSV
File
[Learn more](#)

Link to file Upload file (Preview) [Learn more](#)

File path or URL *
Example: <https://contoso-my.sharepoint.com/p...> [Browse OneDrive...](#)

Connection settings

Connection: Create new connection [Learn more](#)

Connection name: Connection

Data gateway: (none) [Learn more](#)

Authentication kind: Anonymous [Learn more](#)

Power Query

Connect to data source

Text/CSV
File
[Learn more](#)

Link to file Upload file (Preview) [Learn more](#)

Drag a file here to upload
or [Browse...](#)

Connection settings

Connection: Create new connection [Learn more](#)

Connection name: Connection

Data gateway: (none) [Learn more](#)

Authentication kind: Anonymous [Learn more](#)

Link to file

- File path (Local file) => Need Data Gateway
- URL (Onedrive) => Need Microsoft 365

or

Upload file

Connecting data

Create a new dataflow



Start creating your dataflow

Define new tables

Choose a data source to define the tables for your dataflow. You can map your data to [standard Common Data Model](#) tables, or define custom tables instead.

[Learn more](#)

Add new tables

Link tables from other dataflows

Linking to tables from other dataflows reduces duplication and helps maintain consistency across your organization.

[Learn more](#)

Add linked tables

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

Creating a dataflow by using linked tables enables to reference an existing table, defined in another dataflow, in a read-only fashion

Some reasons to choose this approach:

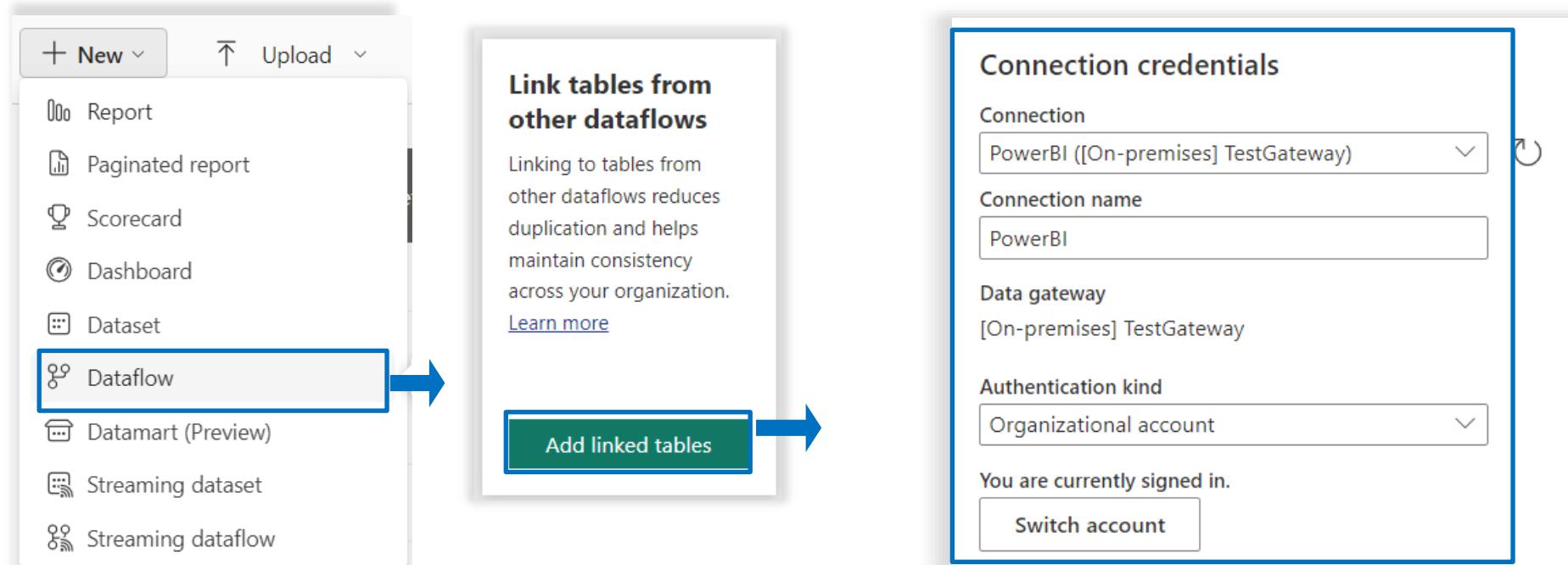
- ✓ Reusability: Create a table once and reference it across multiple dataflows for reuse, such as date tables or static lookup tables.
- ✓ Data source optimization: Use linked tables as a cache to avoid multiple refreshes to a data source, reducing the load on the underlying data source.
- ✓ Table merging: Linked tables facilitate merging or combining data from two tables efficiently.

Connecting data

Link tables from other dataflow



1 Create a new dataflow and config connection



2 Result

Choose data

Search

Display options ▾

- Power BI dataflows (Legacy) [1]
- service_test [1]
- MDA_testing [1]

 2 Datatables

Connecting data

Create dataflow by Import Model



Start creating your dataflow

Define new tables

Choose a data source to define the tables for your dataflow. You can map your data to [standard Common Data Model](#) tables, or define custom tables instead.

[Learn more](#)

[Add new tables](#)

Link tables from other dataflows

Linking to tables from other dataflows reduces duplication and helps maintain consistency across your organization.

[Learn more](#)

[Add linked tables](#)

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](#)

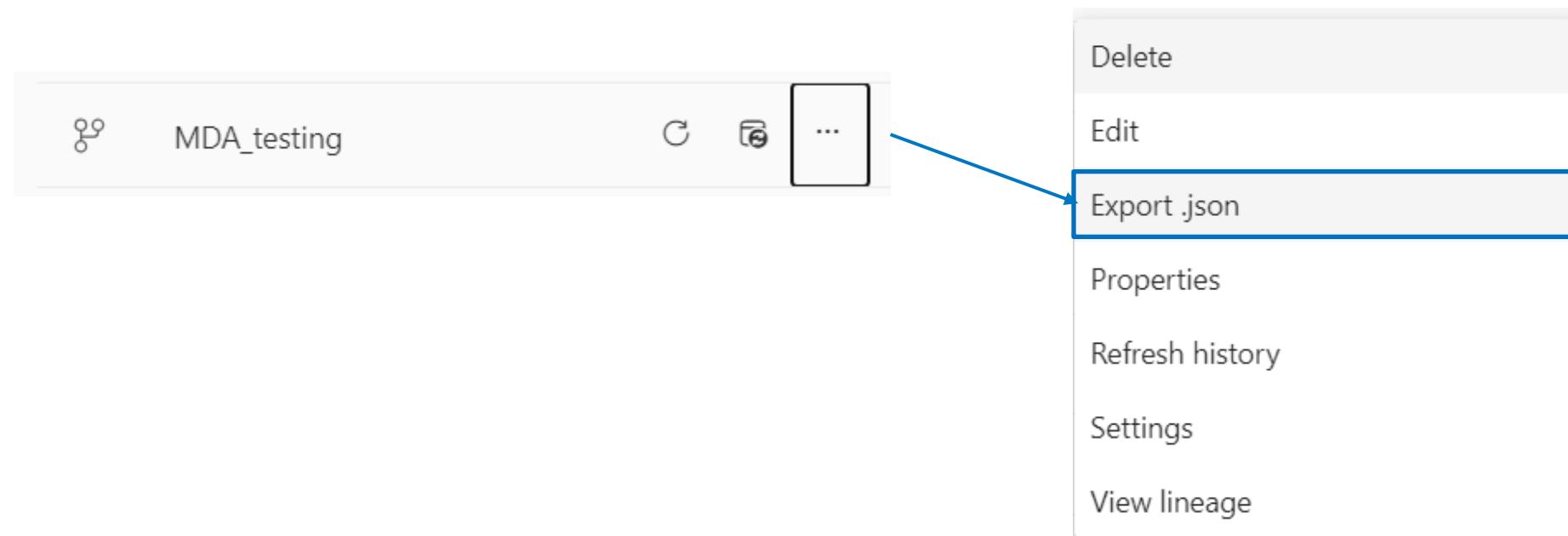
[Create and attach](#)

Connecting data

Create dataflow by Import Model



1 Export dataflow

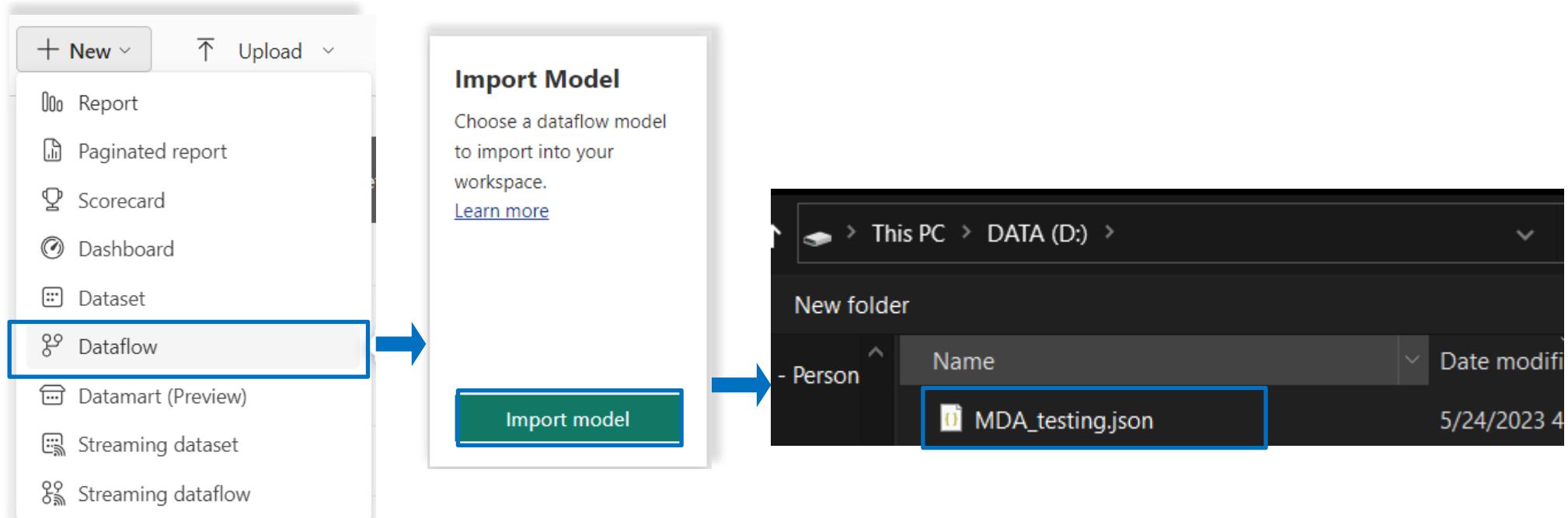


Connecting data

Create dataflow by Import Model



2 Import dataflow



Connecting data

Create dataflow by Import Model



3 Result

MDA_testing ▾

Search

Tables Machine learning models

TABLE NAME

▲ 2 Datatables

COLUMN NAME	DATA TYPE
Name	String
Extension	String
Date accessed	DateTime
Date modified	DateTime
Date created	DateTime
Folder Path	String

Connecting data

Create dataflow by CDM



Start creating your dataflow

Define new tables

Choose a data source to define the tables for your dataflow. You can map your data to [standard Common Data Model](#) tables, or define custom tables instead.

[Learn more](#)

[Add new tables](#)

Link tables from other dataflows

Linking to tables from other dataflows reduces duplication and helps maintain consistency across your organization.

[Learn more](#)

[Add linked tables](#)

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](#)

Connecting data

Create dataflow by CDM



1 Create and attach

The screenshot illustrates the process of creating a new dataflow using the Common Data Model (CDM) in Power BI:

- Step 1:** In the Power BI ribbon, click the **+ New** button and select **Dataflow**. This step is highlighted with a blue box and an arrow pointing to the next step.
- Step 2:** A modal window titled **Attach a Common Data Model folder (preview)** appears. It explains the purpose of attaching a CDM folder to a dataflow. A **Create and attach** button is visible at the bottom of the modal.
- Step 3:** The **Attach a Common Data Model folder to a new dataflow** dialog box is shown. It contains fields for **Name *** (set to **CDM_DataFlow**), **Description**, and **Common Data Model folder path *** (set to **https://myaccount.dfs.core.windows.net/filesystem/path/model.json**). The **Create and attach** button is located at the bottom right of the dialog.

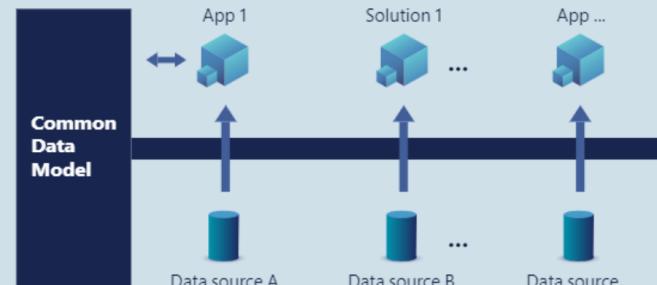


INTEGRATE & DISAMBIGUATE DATA WITH THE COMMON DATA MODEL

An **open-sourced** definition of modular and extensible **business entities** with **semantic metadata** that **simplify the challenges of application development and data integration**.



The Common Data Model unifies data in a well-known schema with semantic consistency.



App developers and backend integrators can develop **independently**.



Enables quick application deployment and development, out-of-the-box intelligence, and much more.

There's a growing collection of solutions that store data in Common Data Model form:



Power BI



Dynamics 365



Power Apps



Azure



On My Workspace & Workspaces Pro, Premium: We practice to load data.

- From Dataset: Excel table, Csv, manual input.
- From Upload: Excel sheet, pbix, rld.
- From Streaming Dataset: API, PubNub, Azure Stream
- From Dataflow (Not available in My Workspace)
- **From Datamart (Not available in My Workspace)
(Premium)**
- From Streaming Dataflow (pending)

Connecting data on Workspace

Introduction datamart



Datamart

Allows us to sort, filter, and aggregate data for ad-hoc analysis through SQL or the no-code Visual Query design, access the data through a SQL endpoint from supported programs and enable users who don't have access to Power BI Desktop to efficiently comb through your organization's data



Datamart features:

- 100% web-based, no other software required
- A no-code experience resulting in a fully managed datamart
- Automated performance tuning
- Built-in visual and SQL Query editor for ad-hoc analysis
- Support for SQL and other popular client tools
- Native integration with Power BI, Microsoft Office and other Microsoft analytics offerings
- Included with Power BI Premium capacities and Premium Per User

USE CASE #1

Departmental self-service data

USE CASE #2

Relational database analytics with Power BI

USE CASE #3

End-to-end semantic models

Connecting data on Workspace

Creating Datamart



MDA_Training

+ New ▾ Upload ▾

- Report
- Paginated report
- Scorecard
- Dashboard
- Dataset
- Dataflow
- Datamart (Preview)** (highlighted with a red box)
- Streaming dataset
- Streaming dataflow

Show all

New datamart

Name Sensitivity No label

Create **Cancel**

Start building your datamart

- Import data from SQL server
- Excel
- Dataflow

[Get data from another source ->](#)

Connecting data on Workspace

Creating Datamart (Sources)



Choose data source

Select a connector or directly drag a file from your computer.

All categories	File	Database	Power Platform	Azure	Online services	Other		Search
Excel workbook File	Text/CSV file	XML file	JSON file	Folder file	PDF file	Parquet file	SharePoint folder file	SQL Server database Database
Oracle database Database	IBM Db2 database Database	MySQL database Database	PostgreSQL database Database	Sybase database Database	Teradata database Database	SAP HANA database Database	SAP BW Application Server Database	Access Database
Google BigQuery Database	Amazon Redshift Database	Impala Database	Vertica Database	Dataflows Power Platform	Power BI dataflows (Legacy) Power Platform	Dataverse Power Platform	Common Data Service (Le...) Power Platform	Snowflake Database
Azure Analysis Services Azure	Azure Blobs Azure	Azure Tables Azure	Azure Data Explorer (Kusto) Azure	Azure Data Lake Storage G... Azure	Azure HDInsight (HDFS) Azure	Azure HDInsight Spark Azure	SharePoint Online list Online services	Azure Synapse Analytics (S...) Azure
Salesforce reports Online services	Google Analytics Online services	Adobe Analytics Online services	Web API Other	Web page Other	SharePoint list Other	OData Other	Active Directory Other	Spark Other
Actian Database <small>BETA</small>	Amazon Athena Database	AtScale cubes Database	BI Connector Database	Data Virtuality LDW Database	Denodo Database	Dremio Cloud Database	Dremio Software Database	Exasol Database
Indexima Database	InterSystems IRIS Database	Jethro Database	<small>BETA</small>	Kylin Database	Linkar PICK Style / M... Database	MariaDB Database	MongoDB Atlas SQL Database	Google BigQuery (Az...) Database
Azure Cosmos DB v2 Azure	Azure Cost Management Azure	Azure Databricks Azure	Azure Synapse Analyt... Azure	Azure Time Series Ins... Azure	HDInsight Interactive Query Azure	Asana Online services	Assemble Views Online services	TIBCO(R) Data Virtualization Database
Automy Data Analytics Online services	Data Connect Cloud Online services	Databricks Online services	Digital Construction Work... Online services	Dynamics 365 Business Ce... Online services	Dynamics 365 Custo... Online services	Emigo Data Source Online services	Autodesk Construction Clo... Online services	Power BI Datamarts Power Platform
Hexagon PPM Smart® API Online services	Industrial App Store Online services	Intune Data Warehou... BETA	Palantir Foundry Online services	Planview Enterprise Archit... Online services	Planview IdeaPlace Online services	Planview Portfolios Online services	Planview ProjectPlace Online services	Automation Anywhere Online services
Quickbase Online services	Smartsheet Online services	SoftOne BI Power BI	TeamDesk Online services	Viva Insights Online services	Webtrends Analytics Online services	Witvio Online services	Zoho Creator Online services	Profisee Online services
Amazon OpenSearch ... <small>BETA</small>	Anaplan Other	BDE Core Other	BitSight Security Ratings BETA	Bloomberg Data and Anal... Other	Celonis EMS Other	Cherwell Other	CloudBluePSA Other	eWay-CRM Online services
EQuIS Other	Eduframe Other	FHIR Other	FactSet RMS Other	Google Sheets Other	Hive LLAP Other	Information Grid Other	Jamf Pro Other	Acterys : Model Auto... Other
Microsoft Teams Pers... Other	OpenSearch Project Other	Paxata Other	QubolePresto Other	Roamler Other	SIS-CC SDMX Other	Shortcuts Business In... Other	SingleStore Direct Qu... Other	MicroStrategy for Power BI Other
SolarWinds Service D... Other	Solver Other	Starburst Enterprise Other	SumTotal Other	SurveyMonkey Other	Tenforce (Smart)List Other	Usercube Other	Vena Other	Kognitwin Other
Zucchetti HR Infinity Other	Blank table Other	Blank query Other						Vessel Insight Other

Connecting data on Workspace

Creating Datamart



The screenshot illustrates the process of creating a datamart in a Power BI workspace named "MDA_Training".

Left Panel: Shows the workspace navigation menu with options like Report, Paginated report, Scorecard, Dashboard, Dataset, Dataflow, and Datamart (Preview). The "Datamart (Preview)" option is highlighted with a blue border.

Middle Panel: A modal window titled "Start building your datamart" is open. It contains three cards: "Import data from SQL server", "Excel", and "Get data". A blue arrow points from the "Get data" card to the "Choose data source" dialog box.

Choose data source Dialog: This dialog lists various data sources under categories: All categories, File, Database, Power Platform, Azure, Online services, and Other. A blue arrow points from the "Get data" card to this dialog.

Right Panel: A modal window titled "Loading data" is open, showing the progress of data loading. It lists four datasets: Categories, Customers, Fmemployees, and Employees. All are shown as 0 rows complete. A blue arrow points from the "Choose data source" dialog to this window.

Bottom Panel: The main workspace view shows a table with four items:

Name	Type
DataModel_Tables	Dataset
Google Analytics_MDA	Dataset
MDADatamart	Dataset (default)
MDADatamart	Datamart

A blue arrow points from the "Employees" entry in the "Loading data" window to the "MDADatamart" entry in the table.

Bottom Left Callout: A green checkmark icon is followed by the text "HEY THIS IS IMPORTANT! Auto-generated datasets from datamart".

On My Workspace & Workspaces Pro, Premium: We practice to load data.

- From Dataset: Excel table, Csv, manual input.
- From Upload: Excel sheet, pbix, rld.
- From Streaming Dataset: API, PubNub, Azure Stream
- From Dataflow (Not available in My Workspace)
- From Datamart (Not available in My Workspace)
(Premium)
- **From Streaming Dataflow (pending)**



Convert to no-code

This option is no longer available

×

We're in the process of replacing streaming dataflows with a new option: no-code editor from Azure Stream Analytics. During this transition, your existing streaming dataflows will be unaffected, but you can't add a new one.

[Learn more](#)

OK

POWER BI SERVICE

PART 1: Introduce PBI Ecosystem (PBI Service) **PART 5: Report and Dashboard**

PART 2: Connecting data

PART 3: Prep Data (On Pro & Premium)

PART 4: Data Modeling

PART 6: Refresh, Scorecard & Metrics

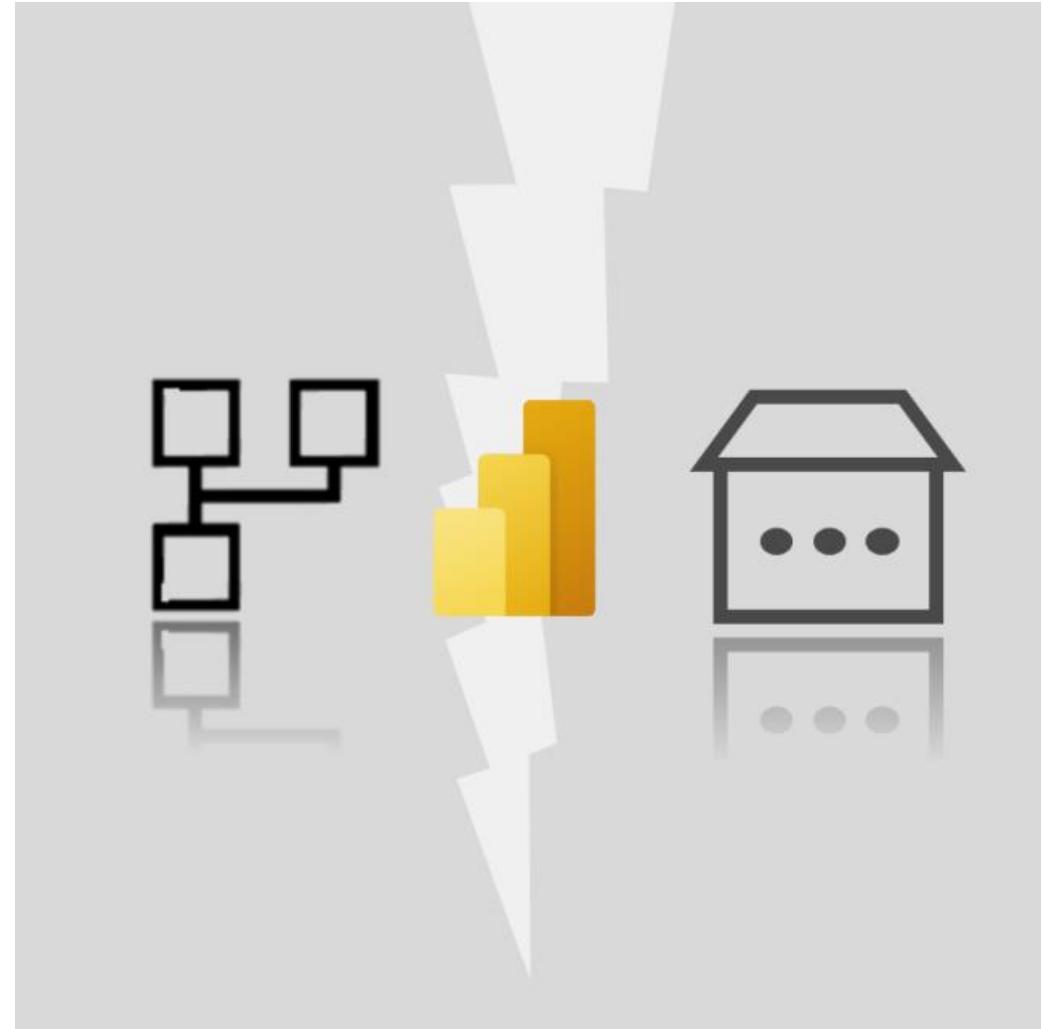
PART 7: Sharing, Collaboration, (PBI Mobile)

PART 8: Deployment Pipelines





- **By Dataflow (Visual, M)**
- By Datamart (Visual, M, SQL)



Prep data (On Pro & Premium) By Dataflow



Open Dataflow

Open a workspace containing a dataflow and then click on the desired dataflow to open it

The screenshot shows the Power BI Home interface. On the left, there's a sidebar with various icons: Home, Create, Browse, OneLake data hub, Apps, Metrics, Monitoring hub, Deployment pipelines, Learn, and Workspaces. The 'Workspaces' icon is highlighted with a blue box. Below the sidebar, the main area is titled 'Workspaces' with a search bar. It shows a list of workspaces under 'My workspace' and 'All'. The '9. BI_Sales Contoso' workspace is highlighted with a blue box at the bottom. A blue curved arrow points from the 'Workspaces' icon in the sidebar down to the '9. BI_Sales Contoso' workspace in the list.

The screenshot shows the 'MDA_Training' workspace. At the top, there are buttons for '+ New', 'Upload', 'Create deployment pipeline', and a refresh icon. Below this is a table with two rows. The first row contains a small icon, the name 'data_flow', and the type 'Dataflow'. The second row contains a small icon, the name 'MDA testing', and the type 'Dataflow'. The 'MDA testing' row is highlighted with a blue box. A blue arrow points from the 'MDA testing' row in the table back up towards the '9. BI_Sales Contoso' workspace in the previous screenshot.

	Name	Type
data_flow	Dataflow	
MDA testing	Dataflow	

Prep data (On Pro & Premium) By Dataflow



Use the Power Query editor to **clean** or **transform** the data prior to loading

Data preview to ensure you're working with the right data

Power Query - Preview file data
C:\Users\ampar\Dropbox\Maven\Power BI Service (Revamp)\Power BI Desktop Files\violations.csv

File origin Delimiter Data type detection
1252: Western European (Windows) Comma Based on first 200 rows

12 points	ab serial_number	ab violation_code	ab violation_description	ab violation_status
1	DAJ5UNMSF	F044	# 44. Floors, walls and ceilings: properly built, maintained in good repair and clean	OJT OF COMPLIANCE
4	DAT2HKIRE	F007	# 07. Proper hot and cold holding temperatures	OJT OF COMPLIANCE
7	DAT2HKIRE	F033	# 33. Nonfood-contact surfaces clean and in good repair	OJT OF COMPLIANCE

Power Query - Edit queries

Home Transform Add column View

Get data Enter data Options Manage parameters Refresh Advanced editor Properties Query Choose columns Remove columns Keep rows Remove rows Reduce rows Sort Transform Combine Map to entity AI insights CDM Insights

Queries [1] Table.TransformColumnTypes(#"Promoted headers", {"points", Int64.Type},

12 points	ab serial_number	ab violation_code	ab violation_description
1	DAJ5UNMSF	F044	# 44. Floors, walls and ceilings: properly built, maintained in good repair and clean
2	DAT2HKIRE	F007	# 07. Proper hot and cold holding temperatures
3	DAT2HKIRE	F033	# 33. Nonfood-contact surfaces clean and in good repair
4	DAT2HKIRE	F035	# 35. Equipment/Utensils - approved, installed; clean, good repair and cold holding temperatures
5	DAQNOI8EA	F033	# 33. Nonfood-contact surfaces clean and in good repair
6	DAQNOI8EA	F007	# 07. Proper hot and cold holding temperatures
7	DAQNOI8EA	F035	# 35. Equipment/Utensils - approved, installed; clean, good repair and cold holding temperatures
8	DAQNOI8EA	F014	# 14. Food contact surfaces: clean and sanitized
9	DAQNOI8EA	F036	# 36. Equipment, utensils and linens: storage and use
10	DAQNOI8EA	F044	# 44. Floors, walls and ceilings: properly built, maintained in good repair and clean
11	DAQNOI8EA	F034	# 34. Warewashing facilities: Adequate, maintained, properly used, test strips available
12	DALVZ4JUV	F035	# 35. Equipment/Utensils - approved, installed; clean, good repair and cold holding temperatures
13			

Query settings
Properties Name: Query Entity type: Custom
Applied steps
Source Promoted h... ABC 123 Changed co... Cancel Transform data

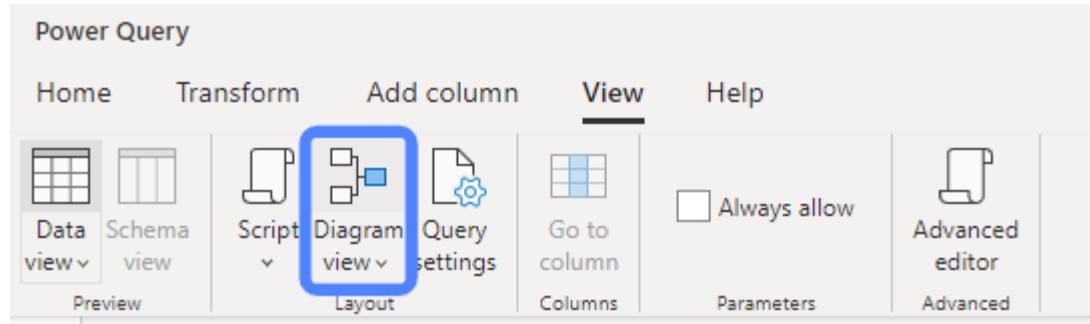
Completed (5.25 s) Columns: 5 Rows: 99+ Step Cancel Save & close

Transform your data by adding **applied steps** (just like Power BI Desktop!)

Prep data (On Pro & Premium) By Dataflow



Special



PersonID	First Name	Surname	Age	Age Range
1	Devlyn	Kinder	34	30
2	Adelena	Raya	69	60
3	Hedleigh	Ridgway	58	50
4	Kalene	Mask	50	50
5	Invantine	Eruwhi	47	40

How the queries and parameters relate within the dataflow.

Completed (152 rows) Columns: 15 Rows: 299+ Cancel Save & close

Prep data (On Pro & Premium) Interface Dataflow

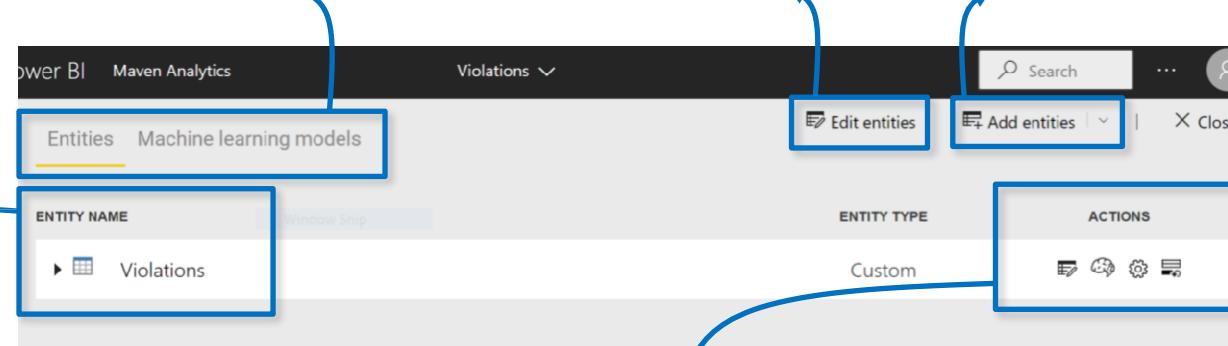


ENTITIES | MACHINE LEARNING MODELS
Switch between views to see your Entities & Machine Learning Models

EDIT ENTITIES
Opens Power Query in the cloud to enable edits & updates

ADD ENTITIES
Add a new or linked entity to your dataflow

ENTITY NAME
Expand to see a list of the columns contained within the entity



EDIT ENTITIES
Opens Power Query in the cloud and links to selected entity to enable edits & updates

APPLY ML MODEL
Apply a defined machine learning model to the selected entity

PROPERTIES
Add a description of your entity to add additional context

INCREMENTAL REFRESH
Configure an incremental refresh policy for your entity defining row storage and refresh
Note: Requires Premium Workspace



Prep data (On Pro & Premium) Interface Dataflow – Auto AI Model



Data prep, modeling, and visualization		
	1 GB	100 GB
Model memory size limit ⁵	1 GB	100 GB
Refresh rate	8/day	48/day
Connect to more than 100 data sources	●	●
Create reports and visualizations with Power BI Desktop ⁴	●	●
Embed APIs and controls	●	●
AI visuals	●	●
Advanced AI (text analytics, image detection, automated machine learning)		●
XMLA endpoint read/write connectivity		●

Prep data (On Pro & Premium) Interface Dataflow – Auto AI Model



Select a column to predict

Choose a model

Select data to study

Name and train

Choose a model

Classification

Regression



Binary Prediction

Predict whether or not an outcome will be achieved.



General Classification

Distinguish between three or more outcomes.



Regression

Estimate a numeric value.

Prep data (On Pro & Premium) Interface Dataflow – Auto AI Model



Tables Machine learning models

New to machine learning models? Here's what you'll be doing:

1. Create and train your model



Select training data

Select your base data to train your model.



Choose a model type

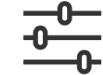
We'll help you pick the best model to achieve your business goals.



Train your model

The model will train on your data and report on its performance.

2. Improve it



Iterate and retrain

Evaluate, customize and retrain your model until it's optimized



Apply the model

Apply your model to future data for predictive insights.

Get started

Prep data (On Pro & Premium)



- By Dataflow (Visual, M)
- **By Datamart (Visual, M, SQL)**

Prep data (On Pro & Premium)



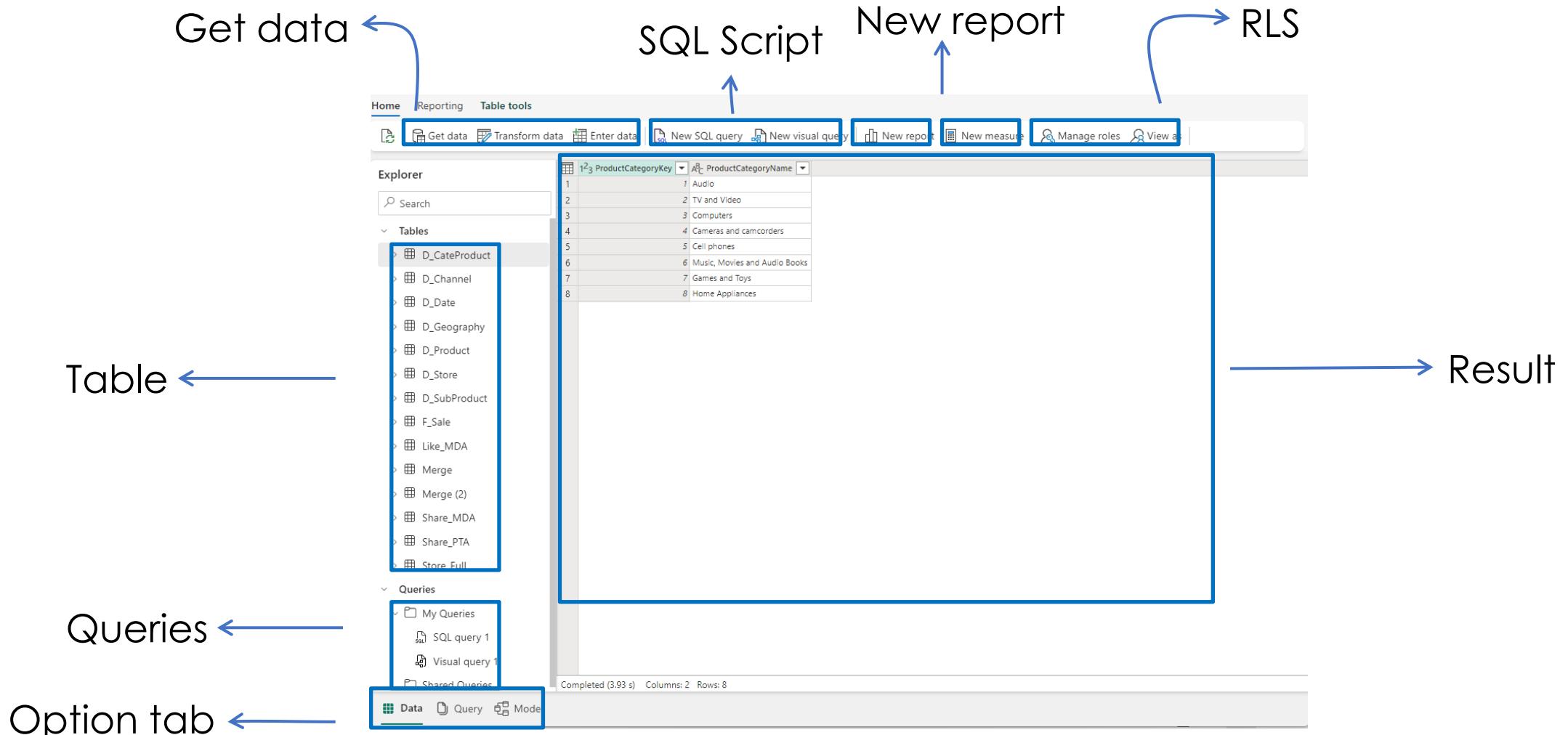
Open Datamart

The screenshot shows the Power BI Home interface. On the left, there's a sidebar with various icons: Home, Create, Browse, OneLake data hub, Apps, Metrics, Monitoring hub, Deployment pipelines, Learn, and Workspaces. The 'Workspaces' icon is highlighted with a blue box. Below it, a blue arrow points upwards towards the 'MDA_Training' workspace. The main area shows the 'MDA_Training' workspace with a search bar, a '+ New' button, an 'Upload' button, a 'Create deployment pipeline' button, and a three-dot menu. A table lists workspaces under 'Name': 'MDADatamart' (highlighted with a blue box), '0. Templates PBI', '1. Internal_Training B2B', '2. Internal_Consulting B2B', '3. Internal_Marketing', '4. Internal_Sale & CS', '5. Internal_HR', '6. Internal_Finance', '7. Public_Workshop', and '9. BI_Sales Contoso'. The 'MDADatamart' row includes columns for 'Type' (Datamart), 'Owner' (Data Analytics Master...), and 'Refreshed'.

Name	Type	Owner	Refreshed
MDADatamart	Datamart	Data Analytics Master...	—
0. Templates PBI			
1. Internal_Training B2B			
2. Internal_Consulting B2B			
3. Internal_Marketing			
4. Internal_Sale & CS			
5. Internal_HR			
6. Internal_Finance			
7. Public_Workshop			
9. BI_Sales Contoso			

Open a workspace containing a datamart and then click on the desired datamart to open it

Prep data (On Pro & Premium) By Datamart



Prep data (On Pro & Premium) By Datamart



Power BI MDA K38 Test Marketing PPU Trial: 59 days left

Home Reporting Table tools

New measure Incremental refresh

A default dataset for faster reporting was created and will be automatically updated with any tables and views added to the datamart. Learn more ↗ Manually update dataset

Explorer

Search

Tables

Sheet1

Queries

SQL query 1

1 ² 3 StoreKey	1 ² 3 GeographyKey	1 ² 3 StoreManager	A ^B C StoreType	A ^B C StoreName	A ^B C StoreDescription	A ^B C Status	A ^B C OpenDate	A ^B C CloseDate	1 ² 3 EntityKey	1 ² 3 ZipCode	1 ² 3 Zi	
1	15	Copy preview data	48	Store	Contoso Renton Store	Contoso Renton Store	On	2/24/2004, 12:00:00 AM		649	97001	
2	17	551	135	Store	Contoso Spokane Store	Contoso Spokane Store	On	3/26/2004, 12:00:00 AM		651	97001	
3	20	824	52	Store	Contoso Englewood Store	Contoso Englewood Store	On	9/29/2004, 12:00:00 AM		654	87001	
4	22	571	54	Store	Contoso Westminster Store	Contoso Westminster Store	On	12/3/2004, 12:00:00 AM		656	87001	
5	25	839	57	Store	Contoso Greeley No.1 Store	Contoso Greeley No.1 Store	On	3/16/2004, 12:00:00 AM		659	80631	
6	27	859	59	Store	Contoso Lafayette Store	Contoso Lafayette Store	On	5/18/2004, 12:00:00 AM		661	87001	
7	30	829	62	Store	Contoso Fort Collins Store	Contoso Fort Collins Store	On	8/21/2004, 12:00:00 AM		664	87001	
8	32	877	63	Store	Contoso Milliken Store	Contoso Milliken Store	On	10/23/2004, 12:00:00 AM		666	87001	
9	35	818	65	Store	Contoso Denver No.2 Store	Contoso Denver No.2 Store	On	10/3/2004, 12:00:00 AM		669	87001	
10	37	803	66	Store	Contoso Boulder Store	Contoso Boulder Store	On	3/28/2003, 12:00:00 AM		671	87001	
11	40	790	69	Store	Contoso Aurora Store	Contoso Aurora Store	On	6/11/2003, 12:00:00 AM		674	87001	
12	42	840	71	Store	Contoso Green Bay Store	Contoso Green Bay Store	On	8/3/2003, 12:00:00 AM		676	54001	
13	45	901	74	Store	Contoso Oshkosh Store	Contoso Oshkosh Store	On	11/6/2007, 12:00:00 AM		679	54001	
14	47	878	75	Store	Contoso Milwaukee No.1 Store	Contoso Milwaukee No.1 Store	On	1/18/2004, 12:00:00 AM		681	54001	
15	50	949	76	Store	Contoso Waukesha No.1 Store	Contoso Waukesha No.1 Store	On	4/19/2004, 12:00:00 AM		684	54001	
16	52	806	137	Store	Contoso Burlington Store	Contoso Burlington Store	On	6/17/2004, 12:00:00 AM		686	54001	
17	55	835	77	Store	Contoso Germantown Store	Contoso Germantown Store	On	9/2/2004, 12:00:00 AM		689	54001	
18	57	913	79	Store	Contoso Port Washington Store	Contoso Port Washington Store	On	11/25/2004, 12:00:00 AM		691	54001	
19	60	870	82	Store	Contoso Madison Store	Contoso Madison Store	On	2/28/2004, 12:00:00 AM		694	54001	
20	65	918	87	Store	Contoso Racine No.2 Store	Contoso Racine No.2 Store	On	7/2/2009, 12:00:00 AM		699	54025	
21	67	849	88	Store	Contoso Houston No.2 Store	Contoso Houston No.2 Store	On	3/11/2004, 12:00:00 AM		701	70001	
22	70	876	89	Store	Contoso Midland Store	Contoso Midland Store	On	9/12/2003, 12:00:00 AM		704	70001	
23	72	879	91	Store	Contoso Minden Store	Contoso Minden Store	On	11/6/2004, 12:00:00 AM		706	70001	
24	75	866	94	Store	Contoso Longview Store	Contoso Longview Store	On	2/19/2004, 12:00:00 AM		709	70001	
25	77	897	96	Store	Contoso Orange Store	Contoso Orange Store	On	2/21/2004, 12:00:00 AM		711	70001	
26	80	858	98	Store	Contoso La Porte Store	Contoso La Porte Store	On	2/18/2004, 12:00:00 AM		714	70001	
27	82	939	100	Store	Contoso Texas City Store	Contoso Texas City Store	On	4/20/2004, 12:00:00 AM		716	70001	
28	85	921	102	Store	Contoso Lakewood Store	Contoso Lakewood Store	On	10/1/2004, 12:00:00 AM		718	70001	

Completed (2.20 s) Columns: 25 Rows: 99+

Data Query Model

Prep data (On Pro & Premium)

By Datamart



Home Reporting Table tools

Get data Transform data Enter data New SQL query New visual query New report New measure Manage roles View as

Power BI MDA.K38.Test Marketing Search (Alt + Q) PPU Trial: Search

Same to Dataflow (Transform)

Power Query Home Transform Add column View Help

Table Any column Text column Number column Date and time column

Queries [1] Sheet1 Source Navigation Promoted headers Changed column...

Table.TransformColumnTypes(#"Promoted headers", {{"StoreKey", Int64.Type}, {"GeographyKey", Int64.Type}, {"StoreManager", Int64.Type}, {"StoreType", type text}, {"StoreName", type text}}, {"Schema", "Schema1"}, {"Preview", true})

It's taking longer than usual to retrieve this data preview.
The schema view (accessible via the View tab) can give you a quicker schema-only preview for certain operations.

Switch to schema view

Running (30.65 s) Status: Waiting for trainingmasteringdata-my.sharepoint.com Memory: 112.1 MB Step Cancel Save

Data Query Model

Prep data (On Pro & Premium)

By Datamart



You can use the **Datamart editor** to create queries to analyze your data. You can use the Visual Query editor for a no-code experience to create your queries

The screenshot shows the Microsoft Power BI Datamart editor interface. On the left, the Explorer pane lists tables like D_Date, D_Channel, and F_Sale. In the center, a query editor window titled "Visual query 1" is open, showing a data grid with columns such as CalendarQuarter, CalendarMonth, CalendarWeek, CalendarDayOfWeek, FiscalYear, FiscalHalfYear, FiscalQuarter, FiscalMonth, IsWorkday, and EuropeSeason. A context menu is open over the first row of the table, displaying options like "Manage columns", "Reduce rows", "Sort", "Transform", "Combine", and "Merge". The "Reduce rows" section includes "Keep top rows", "Keep duplicates", and "Filter rows". The "Sort" section includes "Sort ascending" and "Sort descending". The "Combine" section includes "Merge queries" and "Append queries as new". The "Merge" button is highlighted with a blue box.

Prep data (On Pro & Premium) By Datamart



The **SQL Query Editor** provides a text editor to write queries using T-SQL.
To access the built-in SQL query editor, select the **SQL query editor view** icon located at the bottom of the datamart editor window

The screenshot shows the Power BI Datamart Editor interface. The top navigation bar includes 'Power BI MDA K38 Test', 'Marketing' (selected), 'PPU Trial: 59 days left', and a search bar. Below the navigation is a ribbon with 'Home' selected, followed by 'New SQL query' and 'New visual query'. A message indicates a default dataset was created for faster reporting. On the left, the 'Explorer' pane shows 'Tables' and 'Queries'. Under 'Queries', 'SQL query 1' is selected. The main area displays the T-SQL code:

```
1  SELECT TOP (100) [StoreKey]
2      ,[GeographyKey]
3      ,[StoreManager]
4      ,[StoreType]
5      ,[StoreName]
6      ,[StoreDescription]
7      ,[Status]
```

Below the code, there are buttons for 'Run' and 'More options'. A preview grid shows the results of the query, with columns including StoreKey, GeographyKey, StoreManager, StoreType, StoreName, StoreDescription, Status, OpenDate, CloseDate, EntityKey, ZipCode, ZipCodeExtension, and Store. The preview grid contains 100 rows of data. At the bottom, there are buttons for 'Download Excel file' and 'Visualize results', along with a status message 'Completed (0.93 s) Columns: 25 Rows: 100'.

Prep data (On Pro & Premium) By Datamart



SQL Query Editor

EmployeeID	Count
1	123
2	156
3	127
4	42
5	43
6	96
7	104
8	67
9	72

Once you've written the T-SQL query, select Run to execute the query. The Results preview is displayed in the Results section. The Open in Excel button opens the corresponding T-SQL Query to Excel and executes the query, enabling you to view the results in Excel.

Prep data (On Pro & Premium) By Datamart



Screenshot of the Power BI Data Editor interface showing the preparation of a data mart.

The interface includes:

- Home** tab with **New SQL query** and **New visual query** buttons (the latter is highlighted with a red box).
- Explorer** pane showing **Tables** (Sheet1) and **Queries** (SQL query 1, SQL query 2, Visual query 1, highlighted with a red box).
- Power Query ribbon** with tabs: SQL query 1, Visual query 1, SQL query 2, and a **+ New** button. The **View SQL** button is also highlighted with a red box.
- Sheet1** view showing a data flow with a **Source** and a **table**.
- Data View** showing a table with columns: StoreKey, GeographyKey, StoreManager, StoreType, StoreName, and StoreDescription. The table displays 11 rows of data.
- View SQL** pane on the right containing the following SQL script:

```
1 select [STable].[Date] as [Date],  
2     [STable].[CalendarYear] as [CalendarYear],  
3     [STable].[CalendarMonth] as [CalendarMonth],  
4     [STable].[CalendarQuarter] as [CalendarQuarter],  
5     [STable].[CalendarMonth] as [CalendarMonth],  
6     [STable].[CalendarWeek] as [CalendarWeek],  
7     [STable].[CalendarDayOfWeek] as [CalendarDayOfWeek],  
8     [STable].[FiscalYear] as [FiscalYear],  
9     [STable].[FiscalMonth] as [FiscalMonth],  
10    [STable].[FiscalQuarter] as [FiscalQuarter],  
11    [STable].[FiscalMonth] as [FiscalMonth],  
12    [STable].[IsWorkday] as [IsWorkday],  
13    [STable].[EuropeSeason] as [EuropeSeason],  
14    [STable].[NorthAmericaSeason] as [NorthAmericaSeason],  
15    [STable].[AsiaSeason] as [AsiaSeason]  
16 from [model].[D_Date] as [STable]
```

You can see SQL script and edit it through Visual query

Prep data (On Pro & Premium) By Datamart



Get the T-SQL connection string

Microsoft Power BI Datamart Documentation

General Alerts Subscriptions Dashboards Datasets Workbooks Reports Dataflows **Datamarts (Preview)** App

Finance Datamart

NorthWind

NorthWind Datamart

Settings for NorthWind

▪ Datamart Description

▪ Server settings

Connection string: **Copy**

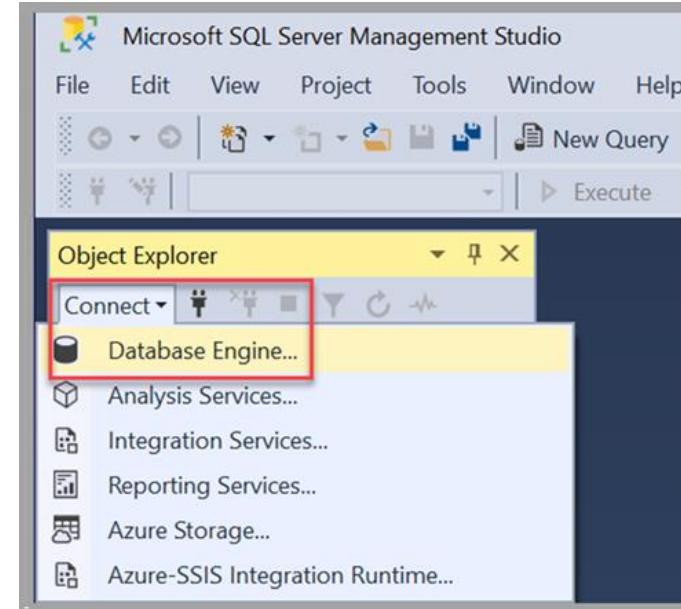
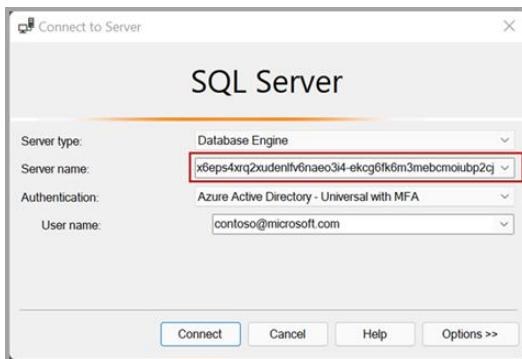
▪ Data source credentials

▪ Scheduled refresh

Keep your data up to date

Refresh frequency: Daily

Time zone: (UTC-08:00) Pacific Time (US and Canada)



With SSMS

Prep data (On Pro & Premium) By Datamart



The screenshot illustrates the process of preparing a datamart using Microsoft SQL Server's Object Explorer. It shows three main windows:

- Object Explorer (Left):** Shows the database structure. A red box highlights the `model.Customer` table under the `model` schema.
- Object Explorer (Middle):** Shows the context menu for the `model.Customer` table. The `Select Top 1000 Rows` option is highlighted with a red box.
- Data Grid (Right):** Displays the results of the query, showing 1,000 rows of customer data. The columns are: CustomerKey, Customer ID, Customer, City, State-Province, Country-Region, Postal Code, and Reserved\$PartitionColumn. The data includes various customers from Concord, California, with IDs ranging from 1 to 33.

Below the data grid, a message indicates the query was executed successfully.

model.Customer table details (highlighted in red box):

- Columns:**
 - CustomerKey (bigint, null)
 - Customer ID (nvarchar(16), null)
 - Customer (nvarchar(32), null)
 - City (nvarchar(32), null)
 - State-Province (nvarchar(32), null)
 - Country-Region (nvarchar(16), null)
 - Postal Code (nvarchar(16), null)
- Triggers**
- Indexes**
- Statistics**



Prep data

Dataset	Dataflow	Datamart
⊖	✓	✓



POWER BI SERVICE



A dark, semi-transparent background image on the left side of the slide shows a hand interacting with a digital interface. The interface displays a line graph with various data points and values labeled, such as 3,690.47, 19.580, 29,140.36, and 124,825. A bright light source, resembling a stylized eye or a cursor, is positioned above the hand, pointing towards the data. The overall aesthetic is modern and professional, suggesting data analysis and technology.

PART 1: Introduce PBI Ecosystem (PBI Service)

PART 2: Connecting data

PART 3: Prep data (On Pro & Premium)

PART 4: Data Modeling

PART 5: Report and Dashboard

PART 6: Metrics

PART 7: Sharing, Collaboration, (PBI Mobile)

PART 8: Deployment Pipelines



- **Editing data model on dataset (required input from PBIX)**
- Editing data model on datamart

Data Modeling

Editing data model on dataset



Editing data models in the Power BI service is automatically enabled for datasets stored in My Workspace

A screenshot of the Power BI Service interface. At the top, there's a navigation bar with icons for "New", "Upload", "Create deployment pipeline", "View", "Filters", and a red-bordered "Settings" button. Below the navigation bar is a "Settings" dialog box for the "Example Workspace". The dialog has tabs for "About", "Premium", and "Azure connections". Under "Data model settings", there's a checked checkbox for "Users can edit data models in the Power BI service (preview)". A red arrow points from the "Settings" button in the main header to the "Data model settings" section in the dialog box.

Example Workspace

+ New ▾ Upload ▾ Create deployment pipeline

View ▾ Filters Settings

Settings

Develop a template app

Template apps are developed for sharing outside your organization.
A template app workspace will be created for developing and releasing the app. [Learn more](#)

Allow contributors to update the app for this workspace

Data model settings

Users can edit data models in the Power BI service (preview)

Allow workspace members to edit data models in the service. Edits are permanent and automatically saved in this feature preview, and version history isn't saved. This setting doesn't apply to editing a dataset through an API or XMLA endpoint. [Learn more](#)

Delete workspace Save Cancel

Data Modeling

Editing data model on Dataset



1

From workspace

A screenshot of the OneLake hub workspace. On the left, there's a list of items including datasets like 'cer', 'ds', and 'MDA', and reports like 'Phiếu thu', 'Report Builder', and 'US Sales Analysis'. In the center, a dataset named 'cer' is selected. A context menu is open over this dataset, listing options such as 'Analyze in Excel', 'Create report', 'Auto-create report', 'Create paginated report', 'Delete', 'Get quick insights', 'Security', 'Rename', 'Open data model' (which is highlighted with a red box), 'Settings', 'Download this file', 'Manage permissions', and 'View lineage'. The number '1' is in the top-left corner of this screenshot.

2

A screenshot of the OneLake hub showing a dataset named 'Phiếu thu' selected. A context menu is open over this dataset, listing options such as 'Analyze in Excel', 'Create report', 'Auto-create report', 'Create paginated report', 'Delete', 'Rename', 'Open data model' (which is highlighted with a red box), 'Settings', 'Download this file', 'Manage permissions', 'View lineage', and 'Share'. The number '2' is in the top-left corner of this screenshot.

3

A screenshot of a report ribbon. The 'Open data model' button is highlighted with a red box. The number '3' is in the top-left corner of this screenshot.

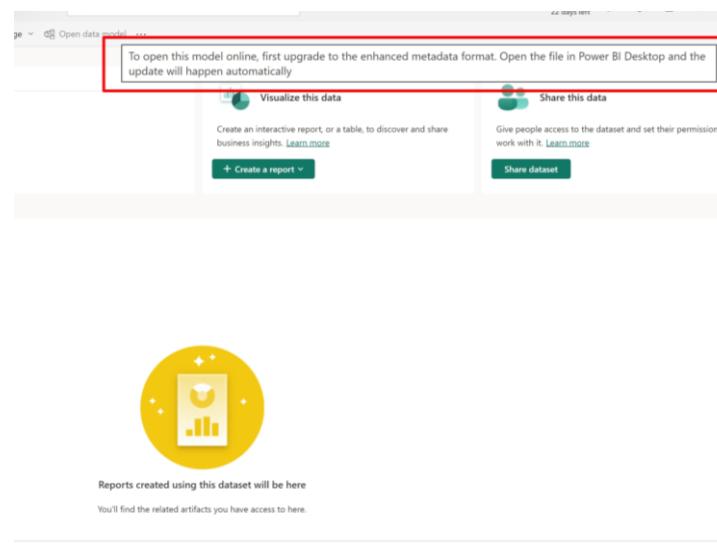
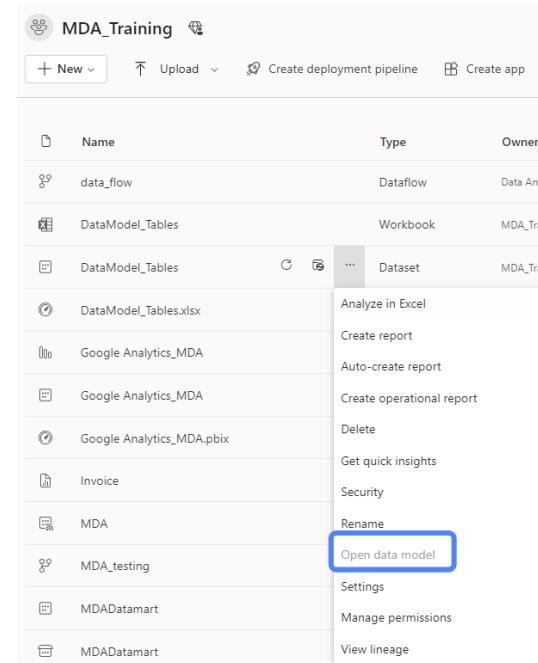
From report

A screenshot of the Power BI Data Model view. The data model is visualized as a network of tables and their relationships. A specific column named 'CategorySubCategory' is selected and highlighted with a red box in the Properties pane. The number '3' is in the top-left corner of this screenshot.

From the OneLake hub

Data Modeling

Editing data model on Dataset



HEY THIS IS IMPORTANT!

Connecting data from Excel file => Can not edit data model



- Editing data model on dataset (required input from PBIX)
- **Editing data model on datamart**



Datamart allows you to **create DAX measures** and **relationships** between your tables, and all datamarts automatically generates a dataset in the end (with all your stuff inside, of course).

Connecting to a datamart from PBI Desktop (PBID) is like connecting to a dataset in your workspace, you will see your tables, your relationship diagram, but you won't see underlying data, nor have power query available to assess data, and you also cannot pick and choose which tables to load.

Data Modeling

Editing data models on Datamart



Power BI MDA K38 Test Marketing PPU Trial: 59 days left Search

Home New SQL query New visual query

A default dataset for faster reporting was created and will be automatically updated with any tables and views added to the datamart. Learn more Manually update dataset

Explorer SQL query 1 Visual query 1 SQL query 2 +

Search

Tables > Sheet1

Queries SQL query 1 SQL query 2 Visual query 1

Sheet1

Source table

Manage columns Reduce rows Sort Transform Combine View SQL

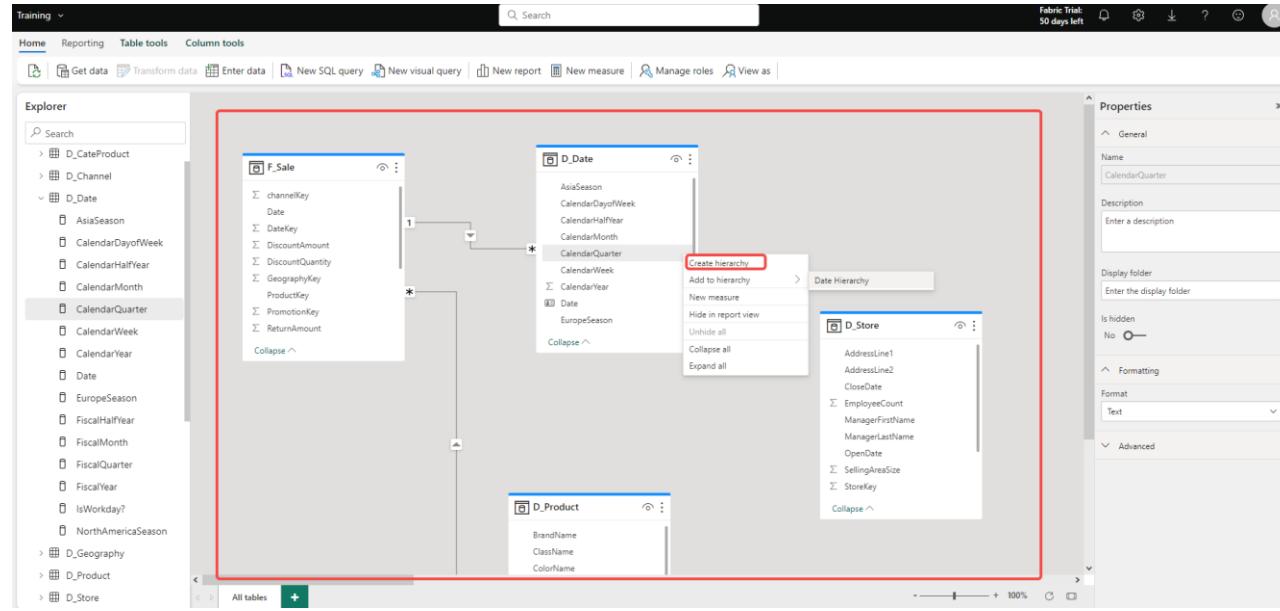
Download Excel file Visualize results

1 ² StoreKey	1 ² GeographyKey	1 ² StoreManager	1 ² StoreType	1 ² StoreName	1 ² StoreDescription	1 ² Status	1 ² OpenDate	1 ² CloseDate	1 ² EntityKey	1 ² ZipCode
1	15	678	48	Store	Contoso Renton Store	On	2/24/2004, 12:00:00 AM			649
2	17	551	135	Store	Contoso Spokane Store	On	3/26/2004, 12:00:00 AM			651
3	20	824	52	Store	Contoso Englewood Store	On	9/29/2004, 12:00:00 AM			654
4	22	571	54	Store	Contoso Westminster Store	On	12/3/2004, 12:00:00 AM			656
5	25	839	57	Store	Contoso Greeley No.1 Store	On	3/16/2004, 12:00:00 AM			659
6	27	859	59	Store	Contoso Lafayette Store	On	5/18/2004, 12:00:00 AM			661
7	30	829	62	Store	Contoso Fort Collins Store	On	8/21/2004, 12:00:00 AM			664
8	32	877	63	Store	Contoso Milliken Store	On	10/23/2004, 12:00:00 AM			666
9	35	818	65	Store	Contoso Denver No.2 Store	On	10/3/2004, 12:00:00 AM			669
10	37	803	66	Store	Contoso Boulder Store	On	3/28/2003, 12:00:00 AM			671

Data Query Model

Data Modeling

Editing data models on Datamart



A screenshot of the Microsoft Power BI Data Mart Documentation interface. It shows a data model with tables like Customers, Orders, and Employees. A new measure named "CustomerCount" is being created, as shown in the "Objects" pane. A "Create Relationship" dialog box is open at the bottom, showing the selection of "retailSales" and "retailProducts" tables, and the definition of a "Many to one (:1)" cardinality with a "Single" cross filter direction. A blue arrow points from the "CustomerCount" measure in the main pane to this dialog box.

You can create data model and create hierarchy (same Desktop)



Data Modeling

Dataset (Excel)	Dataset from PBI report	Dataflow	Datamart
—	✓	—	✓



POWER BI SERVICE

PART 1: Introduce PBI Ecosystem (PBI Service)

PART 2: Connecting data

PART 3: Prep Data (On Pro & Premium)

PART 4: Data Modeling

PART 5: Report and Dashboard

PART 6: Refresh Automation & Metrics

PART 7: Sharing, Collaboration, (PBI Mobile)

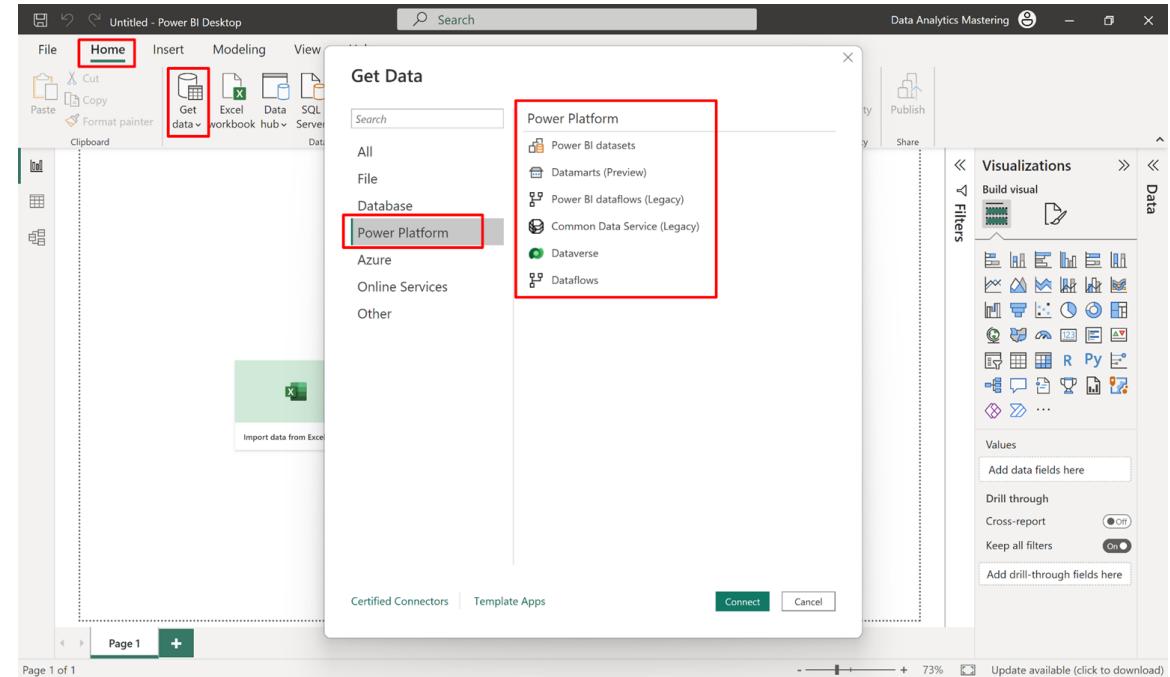
PART 8: Deployment Pipelines



1. In Desktop:

- Connecting from Dataset PBI
- Connecting from Dataflow
- Connecting from Datamart

2. In Service



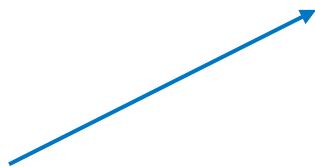
Report and Dashboard

Connecting to dataset PBI in Desktop



Power Platform

- Power BI datasets** (highlighted with a red box)
- Datamarts (Preview)
- Power BI dataflows (Legacy)
- Common Data Service (Legacy)
- Dataverse
- Dataflows



Data hub
Discover data from across your org and use it to create reports. [Learn more](#)

All My data Endorsed in your org

Filter by keyword Filter(s)

Name	Location	Refreshed	Endorsement	Sensitivity
Employee Hiring and History	My Workspace	5/9/23, 5:54:46 PM	-	-
Dashboard Usage Metrics Model	9. BI_Sales Contoso	5/25/23, 7:36:01 AM	-	-
Regional Sales Sample	My Workspace	5/10/23, 12:09:17 PM	-	-
Procurement Analysis Sample	My Workspace	5/10/23, 12:07:48 PM	-	-
Store Sales	My Workspace	5/10/23, 12:02:59 PM	-	-
Corporate Spend	My Workspace	5/9/23, 3:58:18 PM	-	-
Revenue Opportunities	My Workspace	5/9/23, 3:28:57 PM	-	-
Contoso Lookup Tables	My Workspace	5/10/23, 10:16:12 AM	-	-
Contoso_07-09.MDA_Ver1_Exploration	My Workspace	9/19/22, 8:53:06 PM	-	-
Report Usage Metrics Model	My Workspace	5/25/23, 7:17:02 AM	-	-

Connect Cancel

The screenshot shows the Power BI Desktop interface with the 'Data' view pane open. The pane lists several data sources and their tables:

- DMChannel
- DMDate
- DMGeography
- DMProduct
- DMProductCategory
- DMProductSubCategory
- DMStore

**Connecting from Dataset PBI =>
Can not continue to transform data**

Report and Dashboard

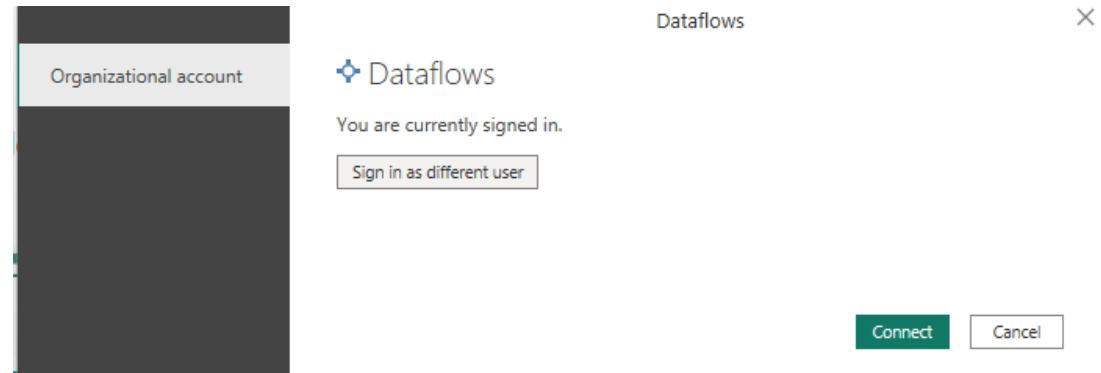
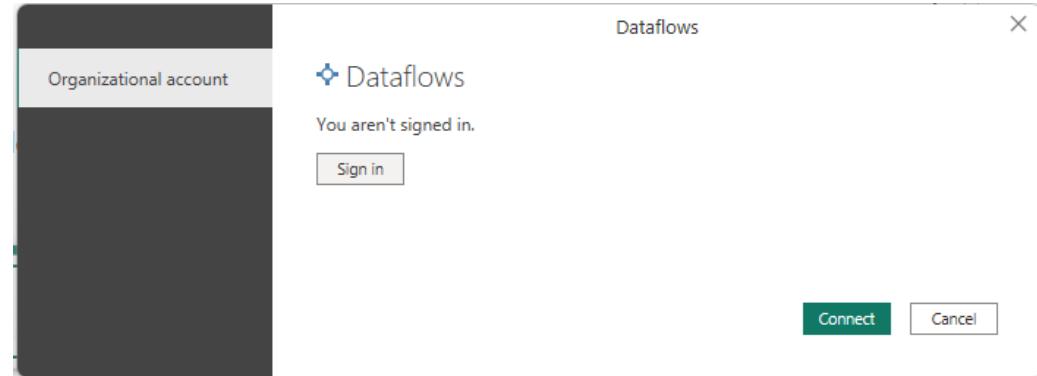
Connecting to PBI dataflow in Desktop



Power Platform

- Power BI datasets
- Datamarts (Preview)
- Power BI dataflows (Legacy)
- Common Data Service (Legacy)
- Dataverse
- Dataflows

Through a third party



Report and Dashboard

Connecting to a dataflow in Desktop



Connect to a dataflow and **load it as a dataset** in Power BI Desktop

The screenshot shows the Power BI Desktop interface. On the left, the Navigator pane displays 'Common data sources' including 'Get data', 'Excel', 'Power BI datasets', 'Power BI dataflows', and 'SQL Server'. A blue box highlights 'Power BI dataflows', and a green checkmark icon is positioned next to it. A blue arrow points from this area to the main content area. The main content area shows a table titled 'Violations' with columns 'points' and 'serial_number'. The table lists numerous rows of data. To the right of the table is the Power BI ribbon with tabs like Home, Insert, Modeling, View, Help, and External Tools. Below the ribbon is a placeholder for 'Build visuals with your data'. The 'Fields' pane on the right shows fields from the 'Violations' table: points, serial_number, violation_code, violation_description, and violation_status. At the bottom, a dialog box is open with buttons 'Load' (highlighted in yellow), 'Transform Data', and 'Cancel'.

HEY THIS IS IMPORTANT!

If your dataflow isn't displaying, make sure you've refreshed it!

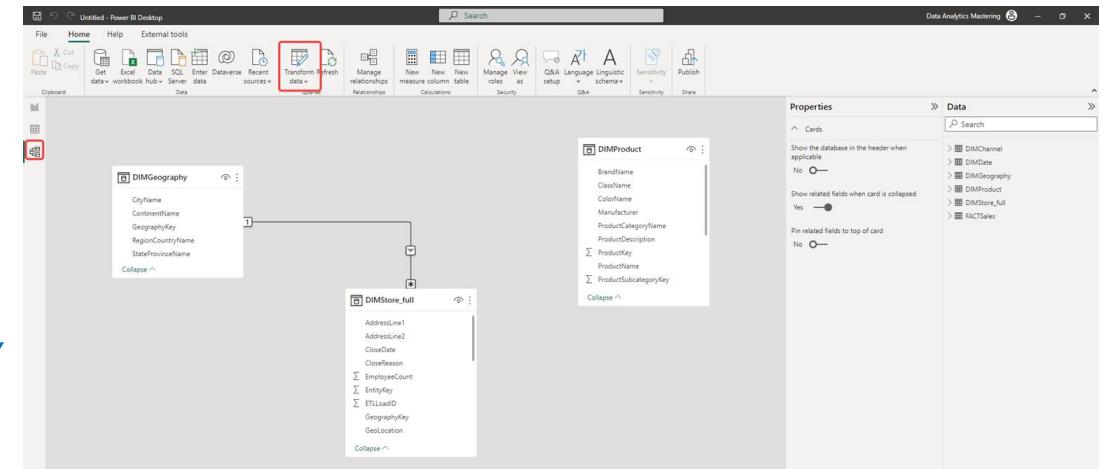
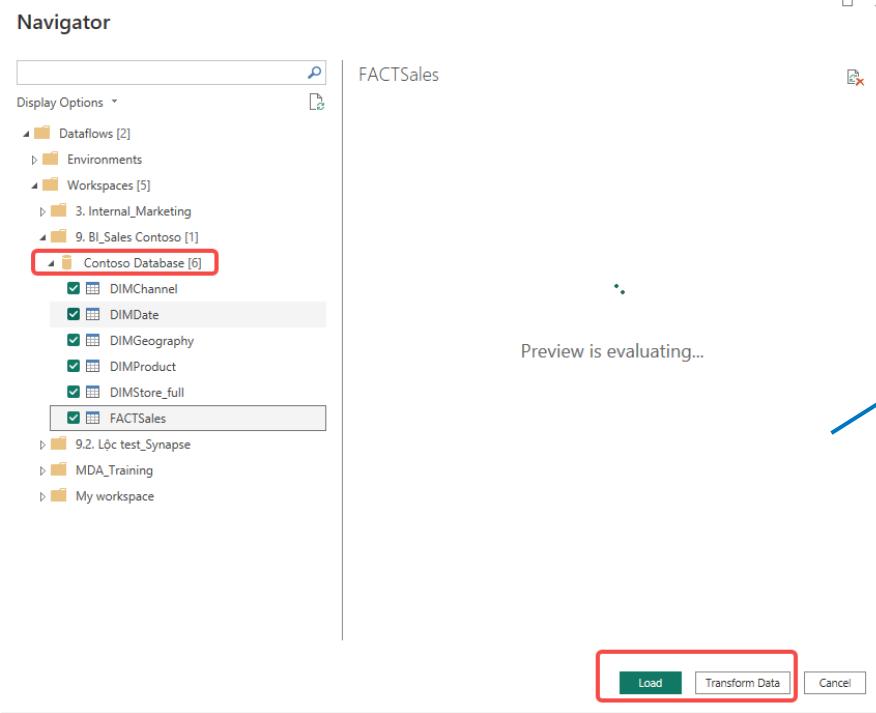
The dataflow won't populate if it hasn't been refreshed in service

Report and Dashboard

Connecting to a dataflow in Desktop



ETL on Dataflow, Need to model
Continue prep on Desktop

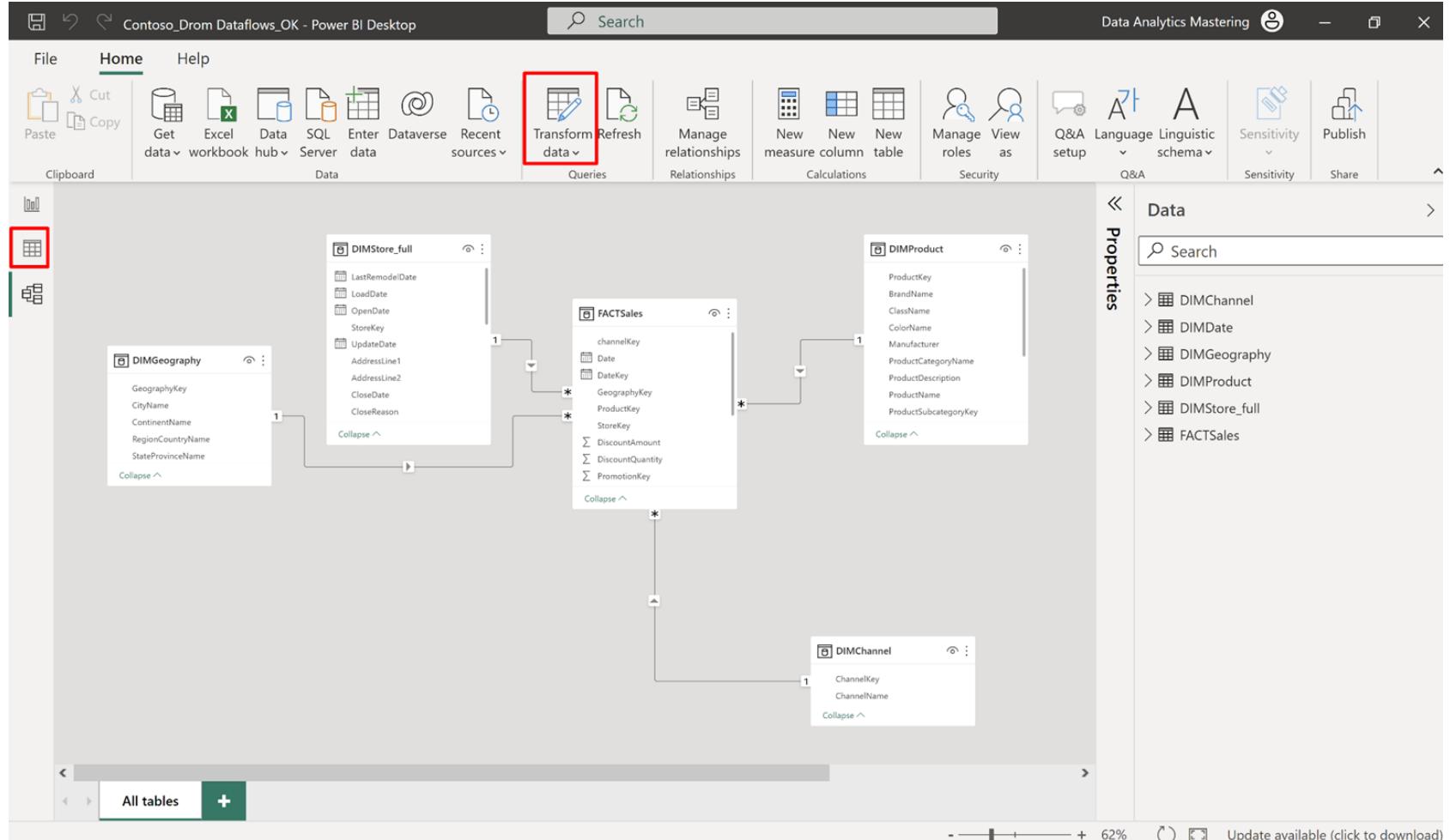


Report and Dashboard

Connecting to a dataflow in Desktop



Can continue to transform

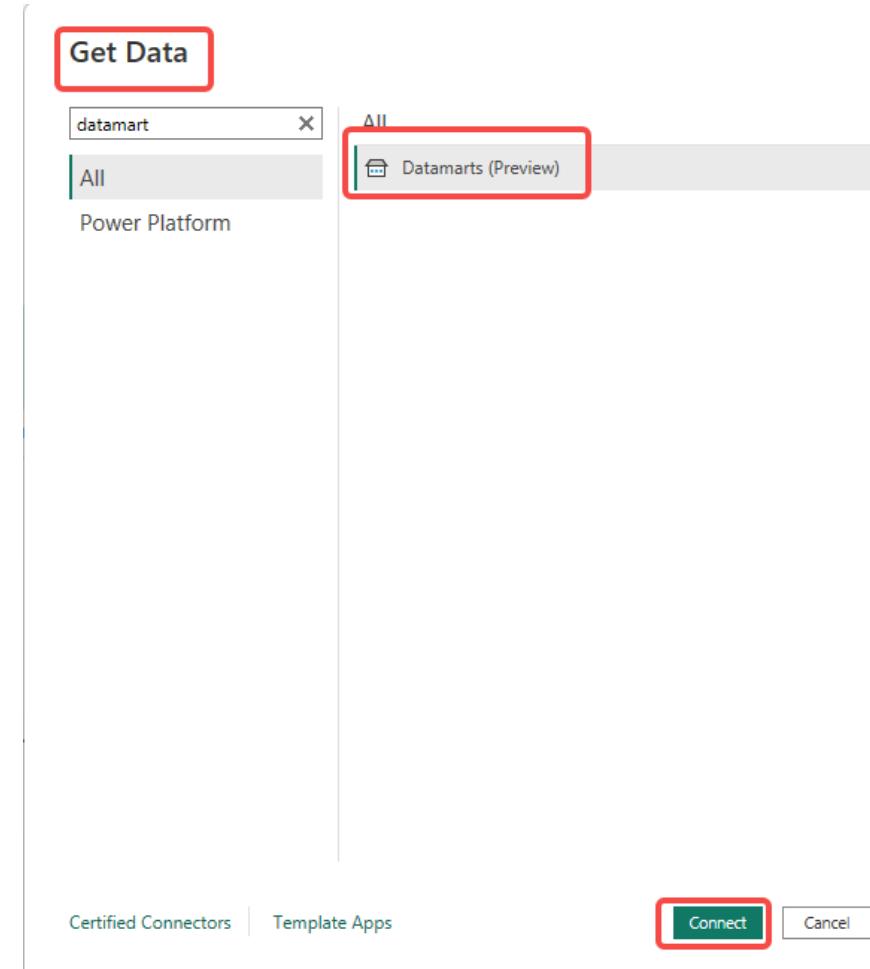


Report and Dashboard

Connecting to a datamart in Desktop



Connecting to a datamart in Desktop



Report and Dashboard

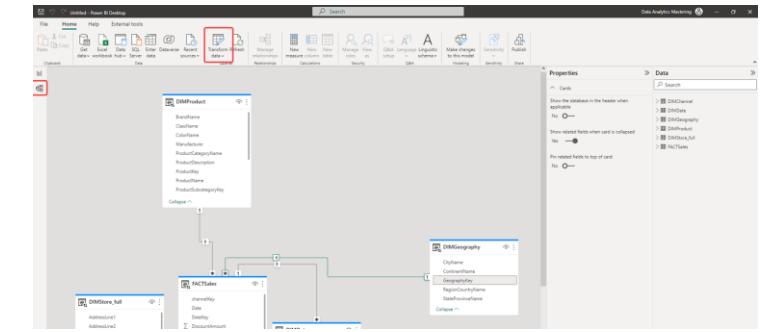
Connecting to a datamart in Desktop



Data hub
Discover data from across your org and use it to create reports. [Learn more](#)

All My data Endorsed in your org

Name	Location	Refreshed	Endorsement	Sensitivity
Nhanh	8. BI_Sales (Microsoft Samples)	1/1/53, 6:42:04 AM	-	-
Contoso Sale Department	9. BI_Sales Contoso	5/10/23, 3:15:43 PM	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-



A DirectQuery connection is required

To make changes to your model (like renaming columns and adding data from multiple sources), you'll need to switch to a DirectQuery connection. This requires adding a local model to your file and is a permanent change.

[Learn more](#)

Step by step: Connecting to a datamart in Desktop

You can not continue to prep data on datamart in Desktop (so need DirectQuery)

Report and Dashboard



In Desktop

	Dataset PBI	Dataflow	Datamart
Prep data	—	✓	—
Data model	✓	✓	✓



1. Report

- In PBI Desktop
- In PBI Service

2. Dashboard

- In PBI Service

Report and Dashboard Report in Desktop & Service



A screenshot of the Power BI Service interface. On the left, the navigation pane shows "Contoso Sales Report". The main area displays a bar chart titled "Sum of SalesAmount by ChannelName" with four bars: Store (~1.8m), Online (~0.8m), Reseller (~0.5m), and Catalog (~0.3m). To the right of the chart is an "Insights" panel with a search bar and a message: "We didn't find any top insights. Select 'All' to check out more insights." The bottom of the screen shows a navigation bar with "Page 1" (highlighted with a red box), "Page 2", and a green plus icon.

A screenshot of the Power BI Desktop interface. The main area shows the same bar chart as the service version. The right side features the "Data" pane, which lists various data fields under categories like "Values" and "Drill through". The bottom of the screen shows a navigation bar with "Page 1" (highlighted with a red box), "Page 2", and a green plus icon.

Same: Basic functions (Page, visual,...)

- 1. In Desktop: Full functions (Suggestion, Hierarchy,...)**
- 2. In Service: Limit functions**



1. In Desktop:

- Connecting from Dataset PBI
- Connecting from Dataflow
- Connecting from Datamart

2. In Service:

- **Connecting from dataset**
- **Connecting from datamart**

Report and Dashboard Report in Service



1. From Dataset (Manual, Published) (+ New report)

The screenshot shows the 'MDA_Training' service interface. A red box highlights the 'Report' option in the left sidebar under the '+ New' dropdown. Below the sidebar, there are two large callout boxes: one for 'Paste or manually enter data' with a grid icon, and another for 'Pick a published dataset' with a database icon.

Add data to start building a report

Paste or manually enter data

Pick a published dataset

Don't see the source you're looking for? Download the desktop app.

2. From Dataset, Datamart

The screenshot shows the 'Contoso Sale Department' service interface. A red box highlights the 'New report' button in the top navigation bar. On the left, the 'Tables' section of the 'Explorer' pane is visible. In the center, a table view shows four rows of data. On the right, a context menu is open for a dataset named 'Contoso Sale Department'. The menu items include 'Analyze in Excel', 'New report' (highlighted with a red box), 'Edit', 'Open with', 'Create deployment', 'Share', 'Favorite', 'Rename', 'Delete', 'Manage permissions', 'Copy SQL connection string', 'Settings', 'Refresh', 'View lineage', and 'View details'.

Name	Type
Book1	Dataset
Book1.xlsx	Dashboard
Contoso Lookup Tables	Dataset
Contoso Lookup Tables.xlsx	
cpu	
Customer Profitability Sample-no-PV	
Data Analytics	

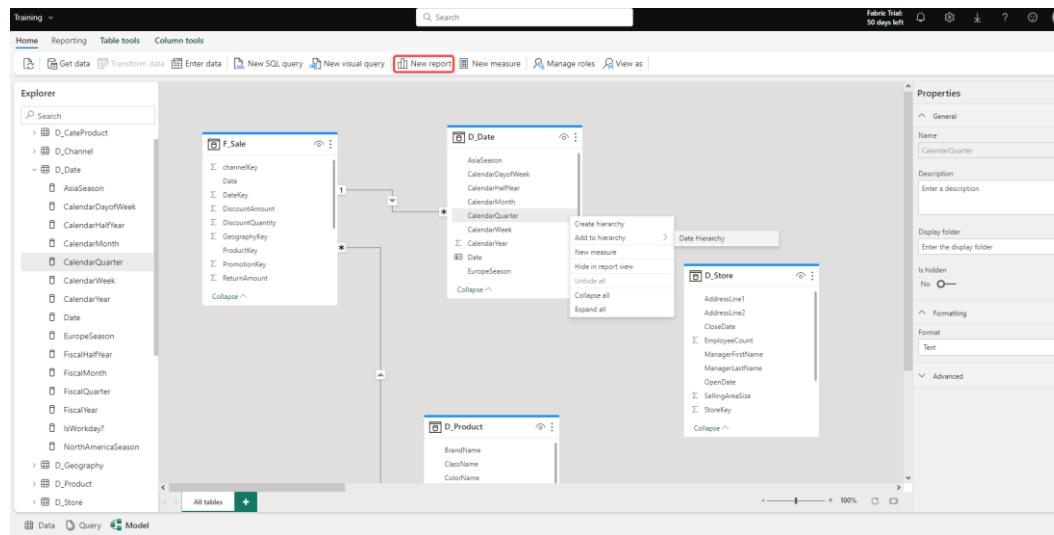
9. BI_Sales Contoso

- + New
- Upload
- Create deployment
- Analyze in Excel
- New report
- Name
- Contoso DASHBOARD
- Contoso Database
- Contoso Sale Department
- Contoso Sale Department
- Contoso Sales Report
- MKTdshfds
- MKTdshfds

Report and Dashboard Report in PBI service



2. From Datamart



Report and Dashboard



Report in Service

	Dataset PBI	Dataflow	Datamart
Report	✓	—	✓
Dataset PBI	✓	—	✓
Dataflow	—	✓	✓
Datamart	✓	✓	✓

Report and Dashboard

Report, Paginated Report, Dashboard (FREE)



My workspace

+ New ▾ ↑ Upload ▾

- Report
- Paginated report
- Scorecard
- Dashboard

Dataset

Streaming dataset

Workspace settings

Type

Dataset

Report and Dashboard Report



Report Reading View

Tools & options for **interacting**, **exploring**, **filtering**, and **pinning** tiles and pages to dashboards



Filters Pane (Visual-Level, Page-Level, Report-Level, and Drill through Filters)

Report Editing View

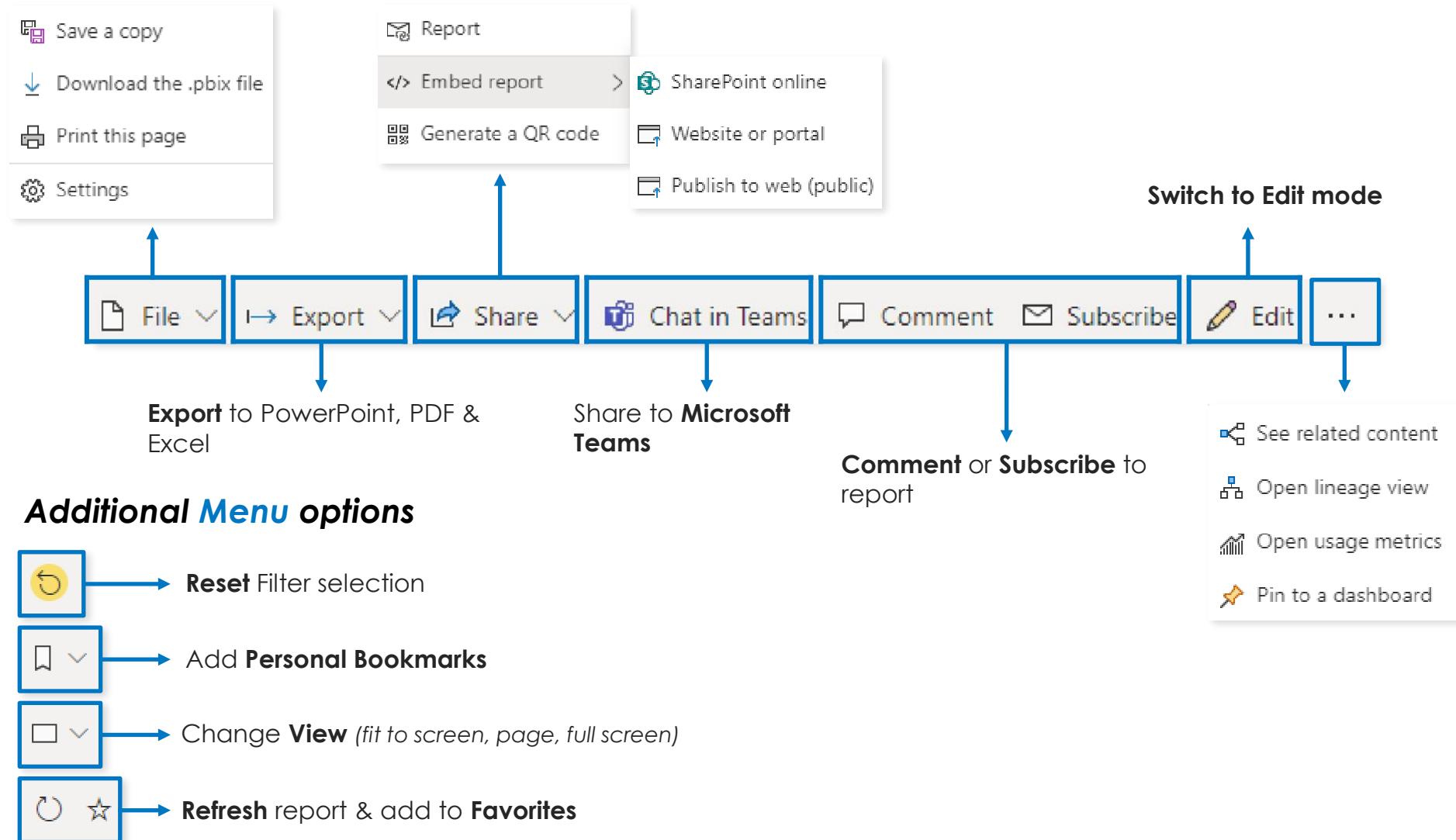
Tools & options for **editing**, **modifying**, and **creating** individual or multiple report visuals



Visualization & Formatting Options (Charts, Slicers, Maps, Matrices, etc.)
Filters Pane (Drill through Filters)

Report and Dashboard

Report reading tools



Report and Dashboard

Report editing tools



The screenshot shows the Microsoft Power BI interface for report editing. At the top, there are navigation buttons: "File" (with dropdown), "View" (with dropdown), "Reading view", and "Mobile layout" (highlighted with a blue box and arrow). Below these are two large context menus:

- File** dropdown menu:
 - Save
 - Save as
 - Print
 - Embed
 - Embed in SharePoint Online
 - Publish to web
 - Export to PowerPoint
 - Export to PDF
 - Download report (Preview)
- View** dropdown menu:
 - Fit to page
 - Fit to width
 - Actual size
 - High-contrast colors
 - Show smart guides (switched On)
 - Show gridlines (switched Off)
 - Snap to grid
 - Lock objects
 - Selection pane
 - Bookmarks pane
 - Sync slicers pane

Below the menus are several toggle switches:

- Show as a table (Off)
- Show next Level
- Expand to next level
- Drill up
- Drill down (Off)
- Drill through (Off)
- Show data point as a table (Off)

At the bottom of the interface are several buttons:

- Ask a question
- Explore (dropdown)
- Text box
- Shapes (dropdown)
- Buttons (dropdown)
- Visual interactions (dropdown)
- Refresh
- Duplicate this page (highlighted with a blue box and arrow)
- Save
- Pin to a dashboard (highlighted with a blue box and arrow)
- Chat in Teams
- ...

Annotations at the bottom explain the functions of the highlighted buttons:

- Use natural language to ask **questions**** (points to the "Ask a question" button)
- Insert **text, shapes**, or **buttons**** (points to the "Text box", "Shapes", and "Buttons" buttons)
- Add a **duplicate** page into the same report** (points to the "Duplicate this page" button)
- Pin entire report to a dashboard** (points to the "Pin to a dashboard" button)

Report and Dashboard

Basic visual



The screenshot shows the Power BI Fields pane. On the left, there's a list of fields categorized under 'Measures Table' and other lookups. A blue box highlights the visualization icons in the top-left corner of the pane. A blue arrow points from the 'Measures Table' section to a blank bar chart on the canvas. Another blue arrow points from the 'Total Violations' field in the 'Measures Table' section to a single teal bar chart on the canvas.

Visualizations > Fields

Measures Table

- % of Total Inspections
- % of Total Violations
- Average Sanitary Grade
- Grade "A" Inspections
- Grade "B" Inspections
- Grade "C" Inspections
- Number of Inspections
- Number of Violations
- Prev Month Avg Sanitary Grade
- Previous Month Inspections
- Total Inspections
- Total Violations**

Drill through

Cross-report

Off

Keep all filters

On

Add drill-through fields here

Values

Add data fields here

(or)

Total Violations
1.0M
0.5M
0.0M

Select a **visualization type** to create a blank chart template on the canvas

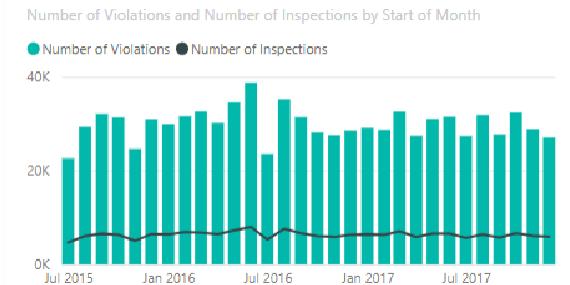
Drag **fields** into the report canvas to automatically generate a new visual (*typically a column chart, by default*)

Report and Dashboard

Basic visual



Example: **Line & Column Chart**



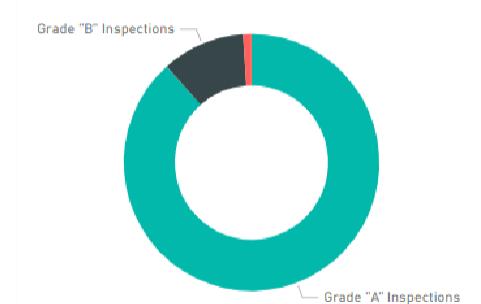
Screenshot of Power BI visualization settings for the Line & Column Chart. The "X axis" section is highlighted with a blue border. It includes options for Type (Continuous), Scale type (Linear), Start (Auto), End (Auto), Color (black), Text size (8 pt), and Font family.

Example: **Matrix**

facility_region	Number of Inspections	Number of Violations
Los Angeles	13,758	271,118
San Gabriel Valley	7,436	141,426
San Fernando Valley	7,010	137,167
Southeast	5,200	92,571
South Bay	4,137	81,763
Westside	2,319	38,339
Harbor	1,629	32,688
Verdugos	1,533	34,471
Antelope Valley	1,270	20,017
Northwest County	1,015	11,401
Pomona Valley	1,000	17,090

Screenshot of Power BI visualization settings for the Matrix visual. The "Conditional formatting" section is highlighted with a blue border. It includes options for Number of Inspections, Background color (Off), Font color (Off), Data bars (On), Icons (Off), and Advanced controls.

Example: **Donut Chart**



Screenshot of Power BI visualization settings for the Donut Chart. The "Data colors" section is highlighted with a blue border. It includes options for Grade "A" Inspections (teal), Grade "B" Inspections (dark grey), and Grade "C" Inspections (red). The "Detail labels" section is also highlighted with a blue border, showing options for On (selected), Shapes, Title (On), Background (Off), Lock aspect (Off), Border (Off), and Shadow (Off).

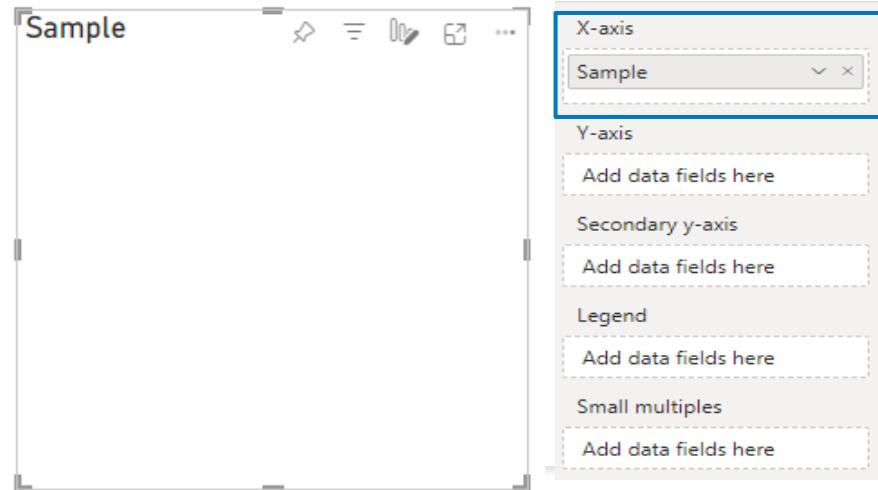
Report and Dashboard

Add an imagine

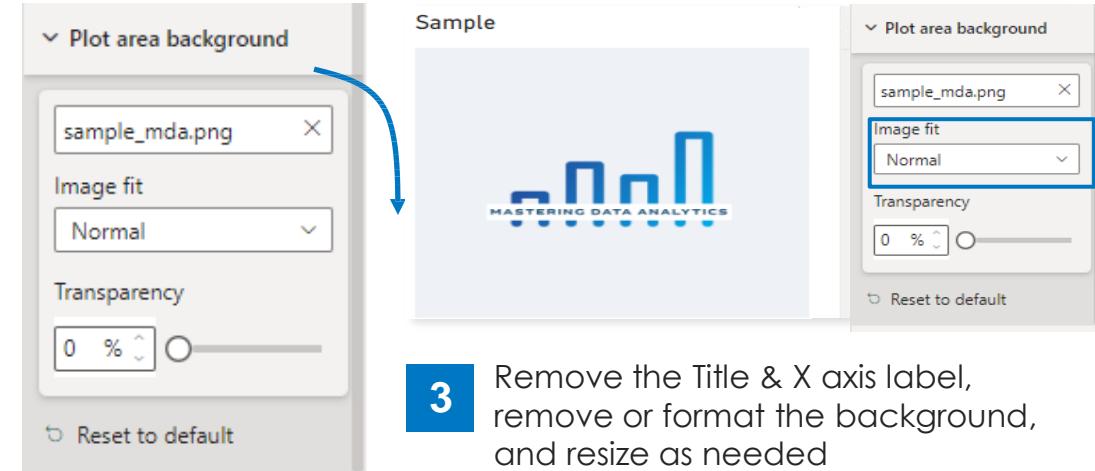


While **adding images** to reports in Power BI Desktop is simple, the process isn't as straightforward in Power BI Service

- 1 Select any visual with plot area (bar, line, area, etc.) add a dimension to the axis but leave all other fields blank



- 2 Add an image from file to the plot area (format pane) and change Image Fit to "Fill"



- 3 Remove the Title & X axis label, remove or format the background, and resize as needed

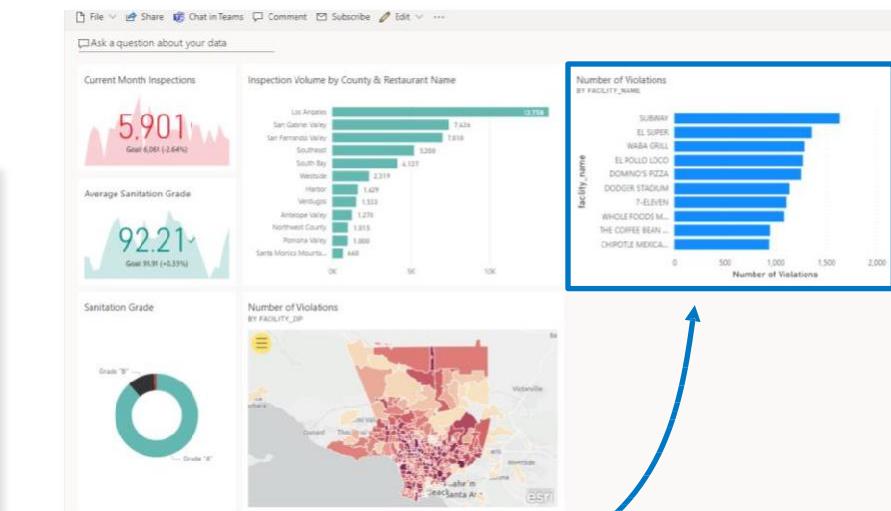


PRO TIP: Plan ahead! If you know you'll need an image in the report, add it in Power BI Desktop first

Report and Dashboard Q&A



Q&A allows you to visualize and explore your data using **natural language queries**



You can even pin the visual to a dashboard!

Report and Dashboard Quick Insight



The **Quick Insights** tool searches for trends and patterns in your dataset and displays up to 32 individual insight cards with visuals and descriptions

The screenshot illustrates the process of generating quick insights. On the left, a list of datasets and reports is shown. For the 'Los Angeles Restaurant Inspections' report, the 'Quick insights' option is highlighted with a blue box. A blue arrow points from this menu item to a modal window titled 'Insights are ready'. This window informs the user that insights are available for the selected dataset and contains a prominent yellow 'View insights' button. Another blue arrow points from this button to the main 'Quick Insights for Los Angeles Restaurant Inspections' card. This card displays two visualizations: a scatter plot titled 'Count of City Lookup and Average of score BY TRANSACTION_DATE' and a donut chart titled 'Count of Region Lookup BY INSPECTOR_ROLE'. Both visualizations include descriptive text and legends.

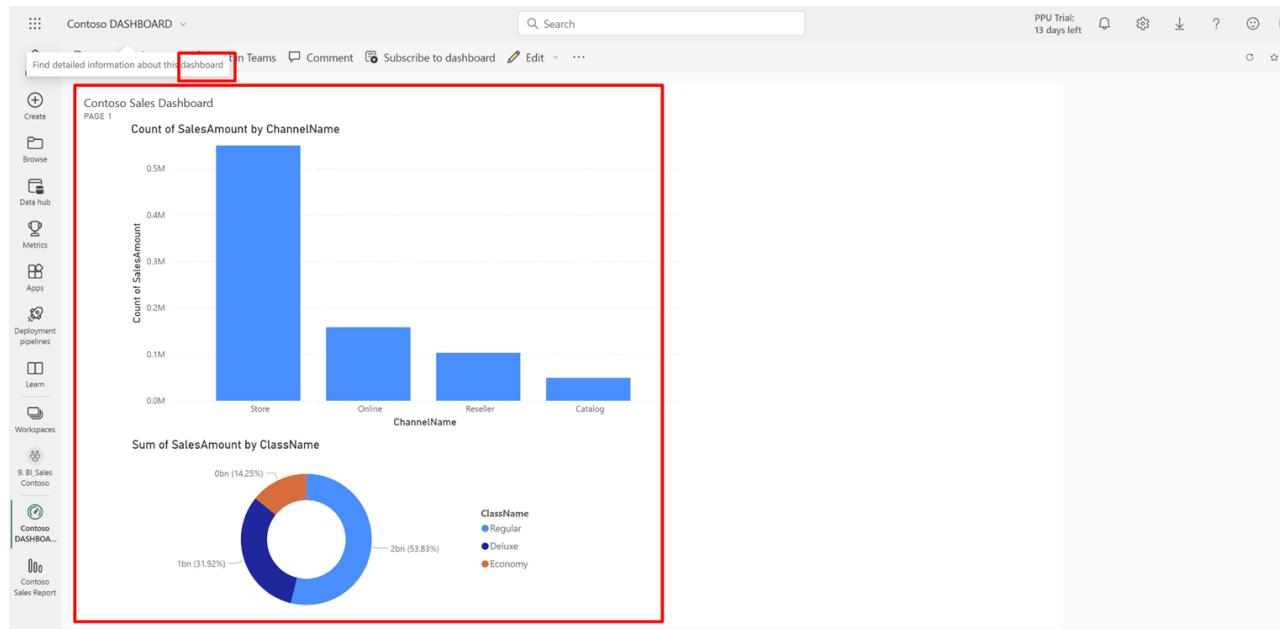
HEY THIS IS IMPORTANT!
Roles (RLS) and Direct Query are not supported, so Quick Insights will be grayed out in either case



Dashboard: Highlight to Present

To highlight information from multiple reports.

For example, you can create a Company Highlight Performance Dashboard that combines data from different reports, such as Sales Report, Marketing Report, and Finance Report.



Report and Dashboard

Pinning tiles to a dashboard



Use the pushpin icon to **pin an individual visual** to a dashboard

The screenshot shows a map of Los Angeles county with various zip codes color-coded based on inspection violations. A blue arrow points from the pushpin icon in the top right corner of the map tile to a 'Pin to dashboard' modal window below it. The modal window contains the following text:

Pin to dashboard
Select an existing dashboard or create a new one.
Where would you like to pin to?
 Existing dashboard
 New dashboard
Select existing dashboard
Los Angeles Restaurant Inspections
Pin Cancel



HEADS UP!

Slicers have some limitations in Power BI, and cannot:

- Drill down non-hierarchical fields
- Support visual level filters
- Be pinned to a dashboard individually (they can be pinned as part of a **live page**)

Report and Dashboard

Pinning entire report to a dashboard



Use the **Pin Live Page** option to pin an entire report to a dashboard

The screenshot illustrates the steps to pin a live page:

- Step 1:** A Power BI report titled "GA 4 - USER ANALYSIS" is open. In the top right corner, there is a "Save" button with a dropdown menu. The "Pin to a dashboard" option is highlighted with a blue box and a blue arrow pointing to the next step.
- Step 2:** A "Preview: Last saved state" dialog box appears, showing a thumbnail of the pinned report. This step is also highlighted with a blue box and a blue arrow.
- Step 3:** A "Pin to dashboard" dialog box is displayed. It contains:
 - A title "Pin to dashboard".
 - A sub-instruction "Select an existing dashboard or create a new one."
 - A question "Where would you like to pin to?" with two options:
 - "Existing dashboard" (radio button)
 - "New dashboard" (radio button, selected)
 - A "Dashboard name" input field.
 - An informational note: "Pin live page enables changes to reports to appear in the dashboard tile when the page is refreshed." with a small info icon.
 - Two buttons at the bottom: "Pin live" and "Cancel".This step is also highlighted with a blue box and a blue arrow.
- Step 4:** The final result is shown, where the pinned report is now visible as a tile on the dashboard.

PRO TIP: Pinning a live page will import slicers, preserve functionality, and reflect any updates to the report

Report and Dashboard Dashboard interface



The screenshot shows a dashboard interface with a toolbar at the top and several data tiles below. The toolbar includes icons for File, Share, Chat in Teams, Comment, Subscribe, Edit, and more. A callout points to the "Ask a question about your data" input field, which is highlighted with a blue border. Another callout points to the "Edit" dropdown in the toolbar. The dashboard itself contains the following tiles:

- Current Month Inspections:** A chart showing 5,901 inspections, with a goal of 6,061 and a variance of -2.64%.
- Average Sanitation Grade:** A chart showing a grade of 92.21, with a goal of 91.91 and a variance of +0.33%.
- Inspection Volume by County & Restaurant Name:** A bar chart showing inspection volumes for various regions. The data is as follows:

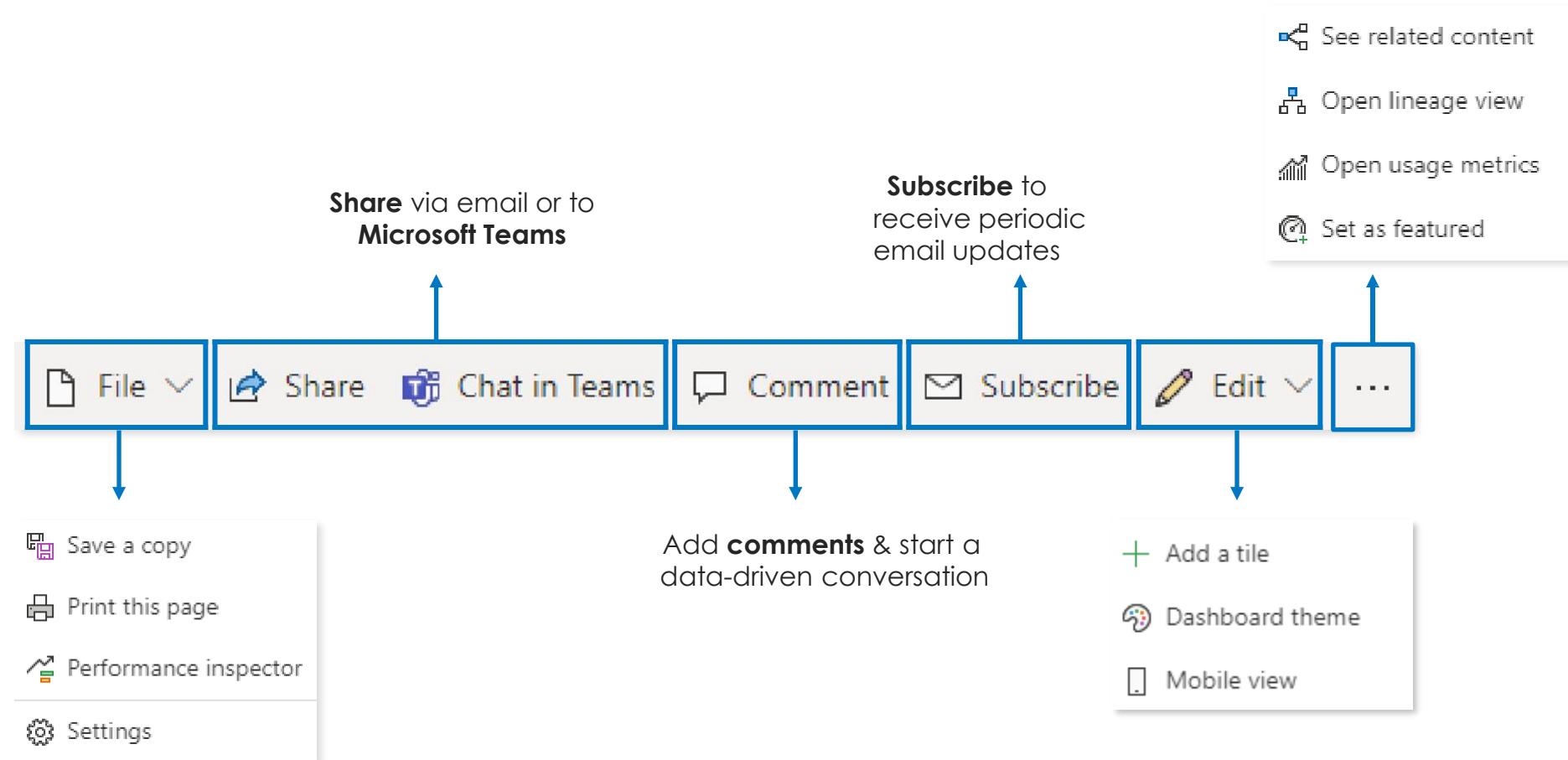
Region	Inspections
Los Angeles	13,758
San Gabriel Valley	7,436
San Fernando Valley	7,010
Southeast	5,200
South Bay	4,137
Westside	2,319
Harbor	1,629
Verdugos	1,533
Antelope Valley	1,270
Northwest County	1,015
Pomona Valley	1,000
Santa Monica Mounta...	660

- Sanitation Grade:** A donut chart showing the distribution of sanitation grades. Labels indicate "Grade 'B'" and "Grade 'A'".
- Number of Violations BY FACILITY_ZIP:** A choropleth map of California showing the number of violations by facility zip code. The map uses a color scale from light yellow (fewer violations) to dark red (more violations).

TOOLBAR

Tools to add new tiles, add/view comments, subscribe, share, set as featured dashboard, etc.

Report and Dashboard Dashboard tools



Report and Dashboard Comment in dashboard



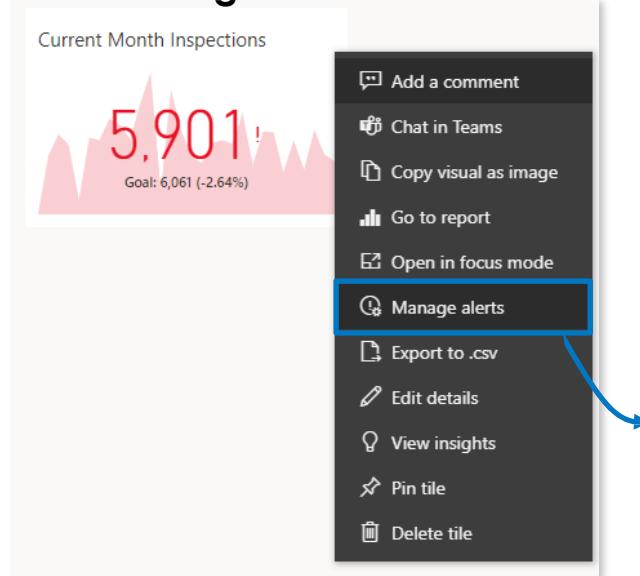
The screenshot illustrates the process of adding a comment to a Power BI dashboard. A context menu is open over a bar chart titled "Total Units YTD". The menu includes options like "Add a comment", "Chat in Teams", "Copy visual as image", "Go to report", "Open in focus mode", "Export to .csv", and "Edit details". A red box highlights the "Add a comment" option. An arrow points from this menu to a detailed view of the comment interface. This interface shows a "Comments" section for "SALES AND MARKETING SAMPLE" with a text input field and a "Post" button. Another arrow points from this interface to a second, larger view of the dashboard. This second view shows a "Comments" section with a message from "Megan Bowen" (@MeganBowen) that reads: "Team, let's look at the YTD Var % spike for Aliqui in July of '14." Below this message is a "Post" button. A blue curved arrow originates from the "Add a comment" option in the initial menu and points towards the "Post" button in the second view.

Report and Dashboard

Add alert in dashboard



- 1 To **add a new alert**, click the ellipsis next to a dashboard tile and select **Manage alerts**



CURRENT MONTH INSPECTIONS

Manage alerts

+ Add alert rule

Alert for Current Month Inspections

Active: On

Alert title: Alert for Current Month Inspections

Set alerts rule for: Number of Inspections

Condition	Threshold
Below	5000

Maximum notification frequency:

At most every 24 hours

At most once an hour

Alerts are only sent if your data changes.

By default, you'll receive notifications on the service in the notification center.

Send me email, too

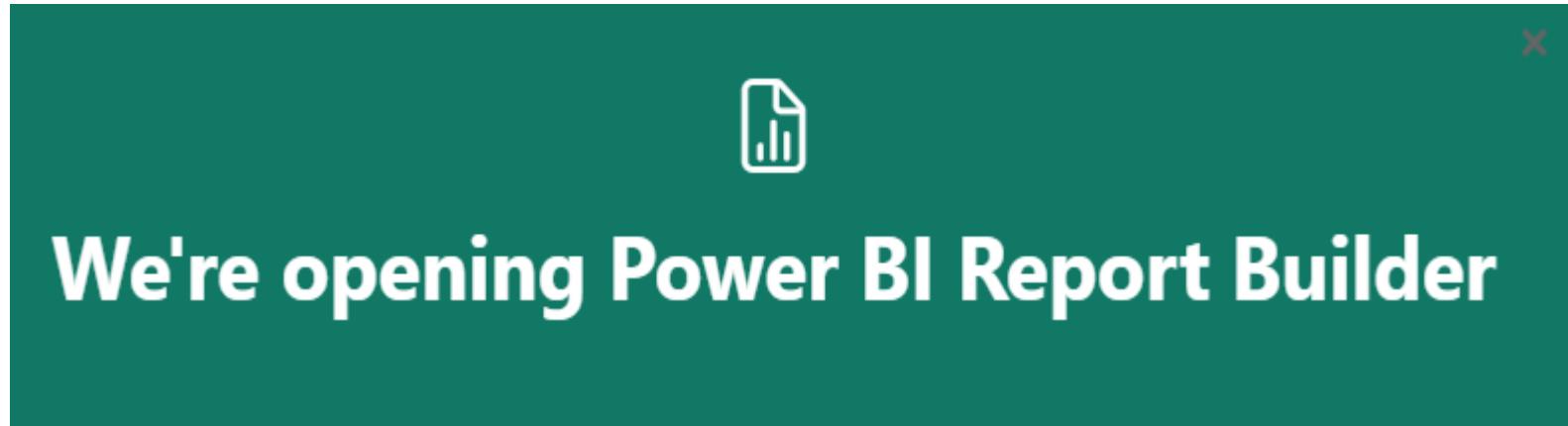
Use Microsoft Power Automate to trigger additional actions

Save and close Cancel

- 2 **Configure** your alert with a name, condition threshold, and notification cadence, then click **Save and close**

HEY THIS IS IMPORTANT!

Alerts can ONLY be set on **gauge charts**, **KPI cards**, and **cards**; they DO NOT work with live pinned report pages



To launch Power BI Report Builder, you need to do a one-time download and installation of the latest version of Power BI Report Builder.

[Download](#)

[Cancel](#)

[I've already installed the latest Power BI Report Builder](#)

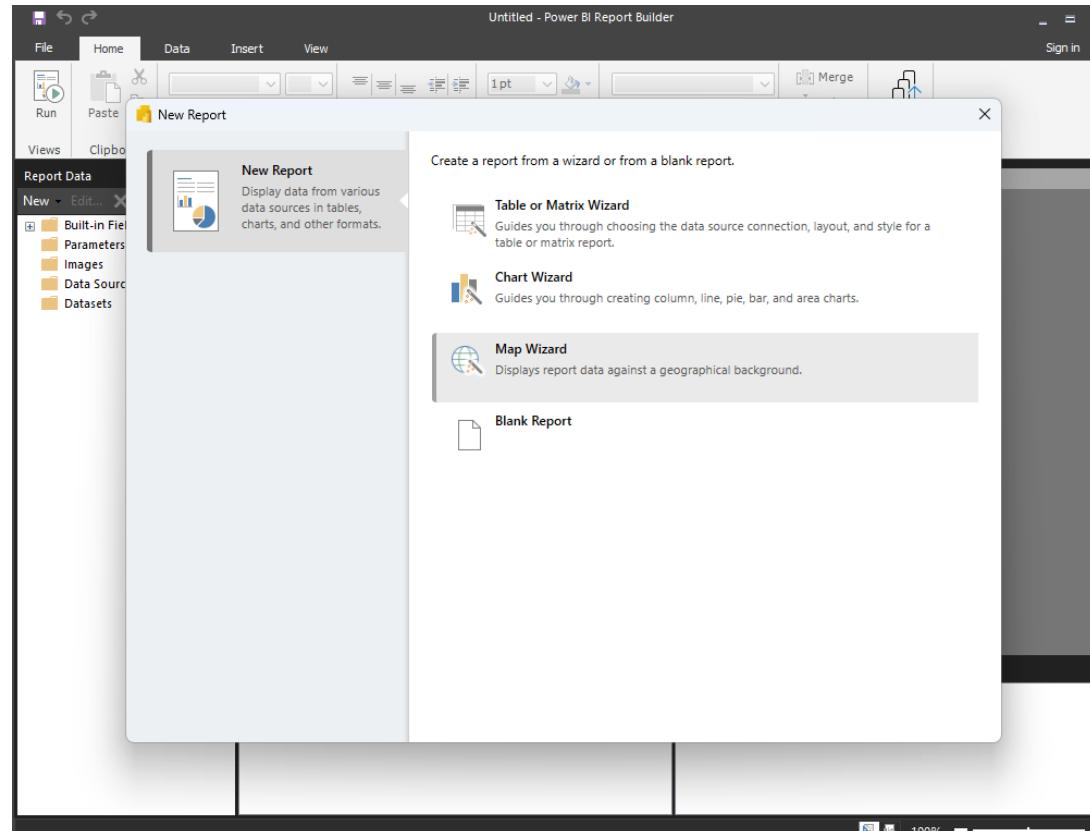
Report & Dashboard

Paginated report



The screenshot shows the Power BI service interface with the workspace name "MDA_Training". The left sidebar lists various report types: Report, Paginated report, Scorecard, Dashboard, Dataset, Dataflow, Datamart (Preview), Streaming dataset, and Streaming dataflow. The "Paginated report" option is highlighted with a red border.

Report Builder (build paginated report)



Report & Dashboard

Paginated report



MDA_Training

+ New ▾ Upload ▾ Create deployment pipeline Create app Manage

Name	Type	Owner
datamartpro	Dataset (default)	MDA_Training
datamartpro	Datamart	Data Analytics Master..
Google Analytics_MDA	Report	MDA_Training
Google Analytics_MDA	Dataset	MDA_Training
Google Analytics_MDA.pbix	Dashboard	MDA_Training
Invoice	Report	MDA_Training
MDA	Dataset	MDA_Training

You can see paginated report and use parameters.

File Home View

Export Parameters

Select company: Contoso Pharmaceuticals

Contoso Pharmaceuticals
123 Second Street
Baldwin City, NY 98052
USA
Telephone 012345678
<http://www.contoso.com/>

Owl Wholesales
123 Violet Road, Phoenix, CO 85003 USA

Invoice CIV-000676 000007-1
30 November 2019
Payment terms: Net 45 days
Payment due 1/14/2020
\$321,113.52

ITEM	DESCRIPTION	QUANTITY	SALES PRICE	DISCOUNT	AMOUNT	
D011	Lens	2	Each	2	0	4.00
L0001	Mid-Range Speaker	35	Each	500	0	17,500.00
P0001	Acoustic Foam Panel	117	Each	37	0	4,329.00
D0003	Standard Speaker	23	Each	220	0	5,060.00
T0001	Speaker cable 10	65	Each	500	0	32,500.00
D0004	High End Speaker	12	Each	2000	0	24,000.00
T0004	Television M120 37" Silver	53	Each	350	0	18,550.00
T0002	Projector Television	23	Each	3750	0	86,250.00
T0005	Television HDTV X590 52" White	33	Each	2890	0	95,370.00
T0003	Surround Sound Receiver	56	Each	450	0	25,200.00
SALES SUBTOTAL AMOUNT					4.00	
SALES TAX					12,350.52	
USD TOTAL					321,113.52	
Sales invoice notes						
METHODS OF PAYMENT			OTHER INFORMATION			



POWER BI SERVICE

PART 1: Introduce PBI Ecosystem (PBI Service)

PART 2: Connecting data

PART 3: Prep Data (On Pro & Premium)

PART 4: Data Modeling

PART 5: Report and Dashboard

PART 6: Refresh, Scorecard vs. Metrics

PART 7: Sharing, Collaboration

PART 8: Deployment Pipelines



Refresh, Scorecard vs Metrics Refresh



Feature ³	Power BI Pro	Power BI Premium Per user	Power BI Premium Per capacity
Collaboration and analytics			
Mobile app access	●	●	●
Publish reports to share and collaborate	●	●	
Paginated (RDL) reports	●	●	●
Consume content without a per-user license			●
On-premises reporting with Power BI Report Server			●
Data prep, modeling, and visualization			
Model memory size limit ⁵	1 GB	100 GB	400 GB
Refresh rate	8/day	48/day	48/day

Refresh, Scorecard vs Metrics

Refresh



- Refresh dataset
- Refresh dataflow
- Refresh datamart
- Refresh report
- Refresh dashboard

Refresh, Scorecard vs Metrics

Refresh



- **Refresh dataset**
- Refresh dataflow
- Refresh datamart
- Refresh report
- Refresh dashboard



Dataset

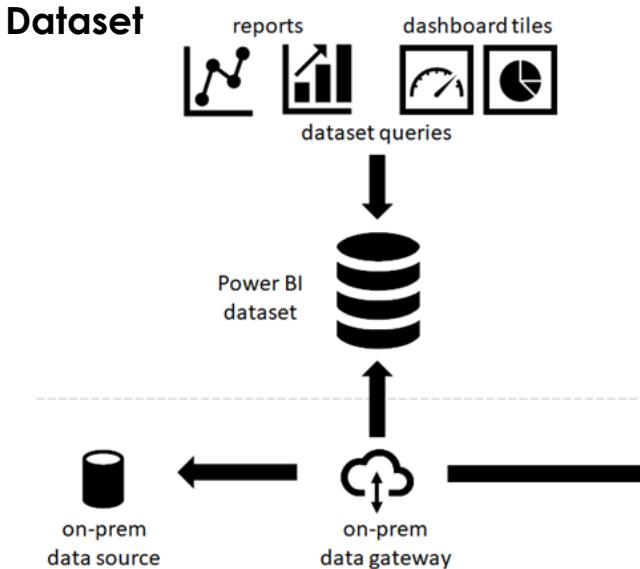
OneDrive refresh

By default, OneDrive updates files hourly. Do you want your files to be kept up to date?

 On

i Refresh can't be scheduled because the data set doesn't contain any data model connections, or is a worksheet or linked table. To schedule refresh, the data must be loaded into the data model.

Refresh, Scorecard vs Metrics Refresh



MDA_Training

+ New Upload Create deployment

Name: Contoso Lookup Tables

General Dashboards Datasets Workbooks Alerts Subscriptions

Settings for AdventureWorksImport
Next refresh: Tue May 21 2019 13:30:00 GMT-0700 (Pacific Daylight Time)
Refresh history

Gateway connection

Data source credentials

Parameters

Scheduled refresh
Keep your data up to date
On
Refresh frequency: Daily
Time zone: (UTC-08:00) Pacific Time (US and Canada)
Time: 1:30 AM X, 1:30 PM X
Add another time
Send refresh failure notification emails to me

Apply Discard

Need Gateway (Personal mode)

Gateway connections					
To use a data gateway, make sure the computer is online and the data source is added in Manage Connections and Gateways . If you're using an On-premises data gateway (standard mode), please select the corresponding data sources and then click apply.					
Use an On-premises or VNet data gateway					
<input checked="" type="radio"/>	On	Gateway	Department	Contact information	Status
	Personal Gateway			Running on DESKTOP-	

Refresh, Scorecard vs Metrics

Scheduled refresh on Dataflow, Datamart, Dataset



You can also configure **scheduled refresh** for other types of datasets

Screenshot of the 'Settings for Violations' page in Power BI. The 'Datasets' tab is selected. A blue arrow points from the 'Datasets' tab to the text 'Select the dataset to refresh and click **Scheduled Refresh** or **Settings** from the ellipsis menu options'. Another blue bracket on the right side of the page groups the 'Scheduled refresh' section and the bottom settings area.

Settings for Violations

This dataset has been configured by Aaron@mavenanalytics.onmicrosoft.com.

[Refresh history](#)

► Gateway connection

► Data source credentials

► Parameters

◀ Scheduled refresh

Keep your data up to date

On

Refresh frequency

Time zone

Time

7 30 AM X

7 30 PM X

Add another time

Send refresh failure notifications to the dataset owner

Email these users when the refresh fails

Aaron Parry Enter email addresses

Apply Discard

Select the dataset to refresh and click **Scheduled Refresh** or **Settings** from the ellipsis menu options

Confirm dataset refresh is working properly (schedules align, errors, etc.)

All Content Datasets + dataflows

	Name	Type	Refreshed	Next refresh
	Violations	Dataset	1/13/21, 11:23:23 AM	1/13/21, 7:30:00 PM
	Violations	Dataflow	1/13/21, 7:02:32 AM	1/13/21, 7:00:00 PM

Set a **Frequency** (daily or weekly), **Time Zone**, and **Time** (half-hour increments AM/PM)

PRO TIP: Offset the dataflow and dataset scheduled refresh times, if they run concurrently the dataset won't reflect recent updates

Refresh, Scorecard vs Metrics

Refresh



- Refresh dataset
- **Refresh dataflow**
- **Refresh datamart**
- Refresh report
- Refresh dashboard

Refresh, Scorecard vs Metrics Refresh



Scheduled refresh allows you to keep your Power BI reports up to date by automatically refreshing dataflows, datamart based on a given frequency & time of day

The screenshot shows the Microsoft Power BI interface. At the top, there are navigation tabs: Datasets, Workbooks, Dataflows (which is selected and highlighted in dark blue), and App. Below these are several management links: Manage personal storage, Create content pack, View content pack, Admin portal, Manage gateways, Settings (which is highlighted with a red box), and Manage embed codes. A blue curved arrow points from the 'Settings' link in the left sidebar to the 'Scheduled refresh' section in the main content area. The main content area is titled 'Settings for Violations' and includes a note that the dataflow has been configured by Aaron@mavenanalytics.onmicrosoft.com. It features sections for Refresh history, Gateway connection, Data source credentials, and Scheduled refresh. Under Scheduled refresh, there is a toggle switch labeled 'Keep your data up to date' which is set to 'On'. Below this are dropdown menus for Refresh frequency (set to 'Daily') and Time zone ('(UTC-05:00) Eastern Time (US and Canada)'). There are also input fields for the hour (7 AM) and minute (00 PM). A link 'Add another time' is present. At the bottom, there is a checkbox 'Send refresh failure notifications to the dataflow owner' and two buttons: 'Apply' (highlighted with a red box) and 'Discard'.

Set **daily** or **weekly** refresh frequencies based on a time zone

Pro licenses can add up to **eight** refreshes per day

Refresh, Scorecard vs Metrics

Refresh



- Refresh dataset
- Refresh dataflow
- Refresh datamart
- **Refresh report**
- **Refresh dashboard**

Refresh, Scorecard vs Metrics Refresh



Refresh report & dashboard

A screenshot of a Google Analytics dashboard titled "GA 4 - USER ANALYSIS". The dashboard header includes the date "Tuesday, March 21, 2023" and "Latest Date". The top navigation bar shows various options like "File", "View", "Reading view", "Mobile layout", "Open data model", "Ask a question", "Explore", "Text box", "Shapes", "Buttons", "Visual interactions", and "Refresh". The "Refresh" button is highlighted with a red box. The dashboard itself has a dark blue header and a light blue body with some text and icons.

Refreshing report => Dashboard automatically refresh

Refresh, Scorecard vs Metrics

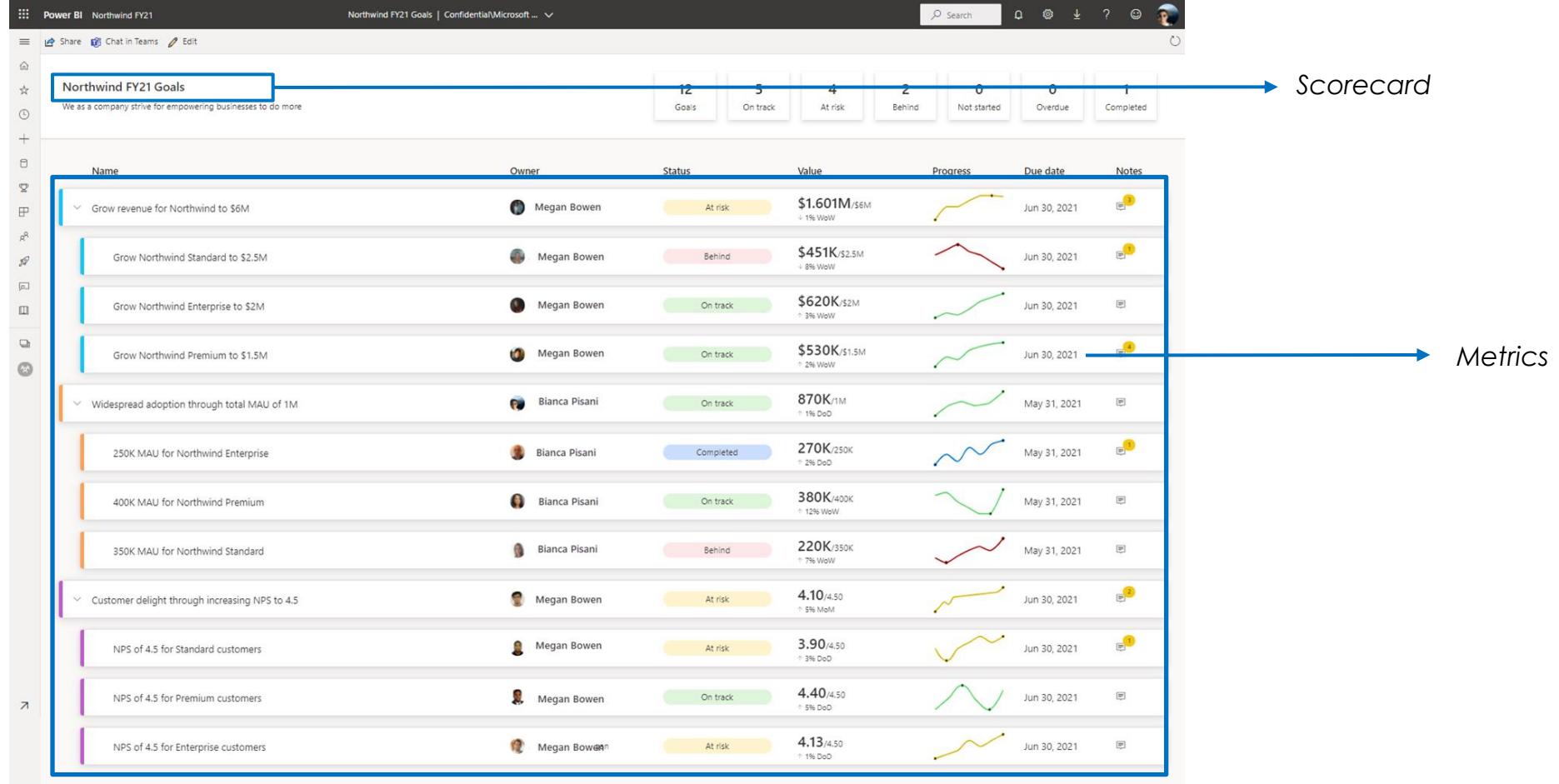
Scorecard



- Power BI Scorecards serve as a centralized platform for visualizing and analyzing Key Performance Indicators (KPIs) for employees, teams, and business areas.
- They enable organizations to assess overall performance and productivity in a visually appealing manner.
- Scorecards provide a consolidated view of KPIs, allowing for easy monitoring and analysis.
- They help track progress, identify trends, and make data-driven decisions.
- Power BI Scorecards offer an aesthetically pleasing presentation of KPIs, enhancing the understanding and engagement of users.

Refresh, Scorecard vs Metrics

Scorecard



Refresh, Scorecard vs Metrics



Metrics in Power BI let customers curate their metrics and track them against key business objectives, in a single pane. This feature enhances data culture by promoting accountability, alignment, and visibility for teams and initiatives within organizations.

The screenshot shows the Power BI Metrics workspace. At the top, there's a header bar with the Power BI logo, trial information (53 days left), a search bar, and a user profile icon. Below the header is a section titled "Metrics" with a sub-section "Recommended". This section displays four cards:

- Completion rate**: 20 %/100 % (Green, 100% Yearly growth, On track)
- Increase MAU**: 3.40/4.00 (Green, On track)
- Generate email revenue**: \$328/\$500 (Red, 38% Weekly growth, Behind)
- Increase location impre**: 856/1K (Green, On track)

Below the recommended section is a navigation bar with tabs: Recent (selected), Favorites, Shared with me, All scorecards, and a search bar. The "Recent" tab shows a list of recent scorecards:

Name	Owner	Opened	Endorsement
Tailspin project	Tailspin	9 days ago	—



License requirements

Users can access various aspects of the experience depending on their license.

Permission	Minimum requirements
Author and share scorecards and metrics, and perform check-ins	Power BI Pro license
View scorecards and metrics	Power BI Premium capacity + Free user OR Power BI Pro license
View scorecard samples and author scorecards in My Workspace	Free user

Recent, Favorites, Shared with me, and All Scorecards

The next section is a tabbed list.

Recent	Favorites	Shared with me	All scorecards	Search	New scorecard		
Name				Owner	Opened	Endorsement	Sensitivity
	Northwind			Sales & Returns	a day ago	—	—
	Sales & Returns scorecard			Sales & Returns	a day ago	—	—

- **Recent** are the scorecards you've visited most recently. Each item has a timestamp.
- **Favorites** are the scorecards you've starred.

Refresh, Scorecard vs Metrics

Overview Scorecard vs Metrics

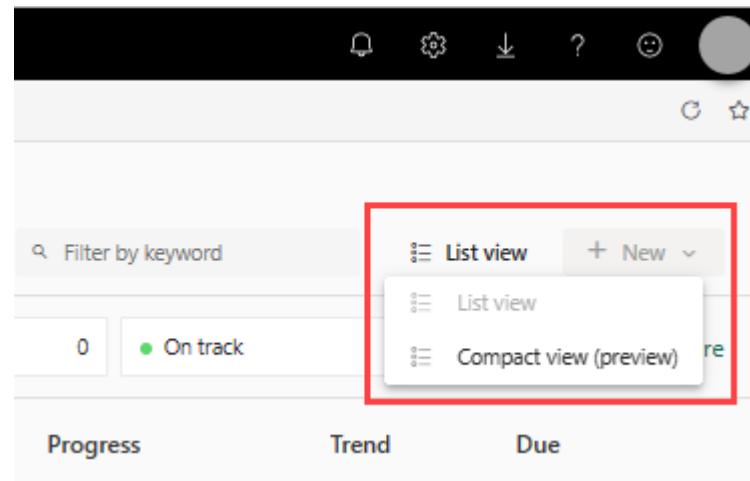


Name	Add to Favorites
Northwind	Sales

- **Shared with me** contains scorecards that your colleagues have shared with you.
- **All scorecards** lists all the scorecards you have access to.

Change the scorecard view

When you're viewing your scorecard, you can also change the view from **List view** to **Compact view**, which is currently in preview.



Compact view adjusts to various screen sizes and supports resizing columns. You can do everything you can do in list view, except editing and creating a new metric.



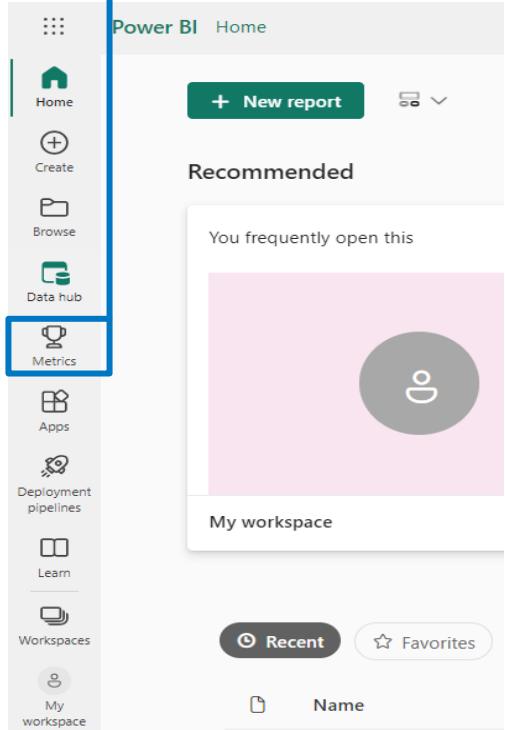
- Creating scorecard
- Creating metric

Refresh, Scorecard vs Metrics

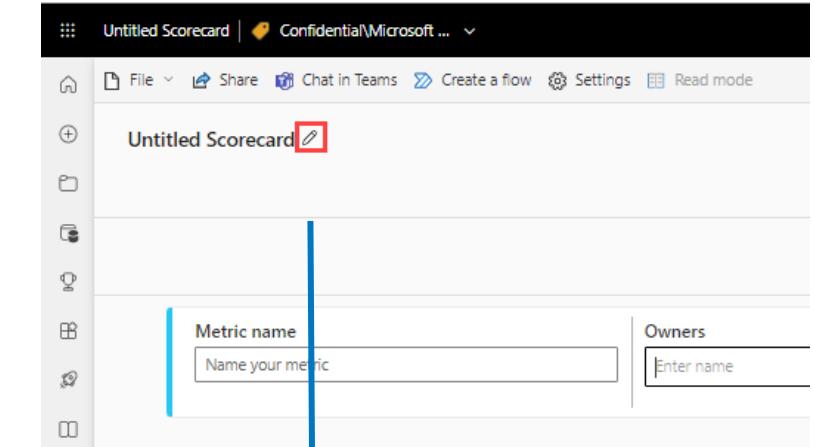
Create scorecard



Select **Metrics** in the navigation pane



Select **New scorecard**



Select the edit pencil next to **Untitled Scorecard** and new scorecard a name

Refresh, Scorecard vs Metrics

Create scorecard



Power BI saves these items in the workspace: the scorecard itself, and a dataset associated with your scorecard that houses all the metrics data.

A screenshot of the Power BI workspace interface. At the top, there's a navigation bar with "My workspace", "New", "Upload", "View", and "Filters". Below it, a filter bar shows "All", "Content", and "Datasets + dataflows". The main area is a table with columns: Name, Type, Owner, Refreshed, Next refresh, Endorsement, and Sensitivity. There are four items listed:

Name	Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity
Product Analysis	Dashboard	Data Analytics Master...	—	—	—	—
Sample_metrics	Scorecard	Data Analytics Master...	17:13:05 4/5/23	—	—	—
Sample_metrics	Dataset	Data Analytics Master...	17:13:05 4/5/23	N/A	—	—

The "Sample_metrics" row, which contains both a Scorecard and a Dataset, is highlighted with a blue border.

PRO TIP: You can also define one or more submetrics for your metric. Like their parent metrics, submetrics can be either connected or set manually.



- Creating scorecard
- Creating metric
 - Creating connected metrics
 - Creating submetrics
 - Creating automate metrics statuses

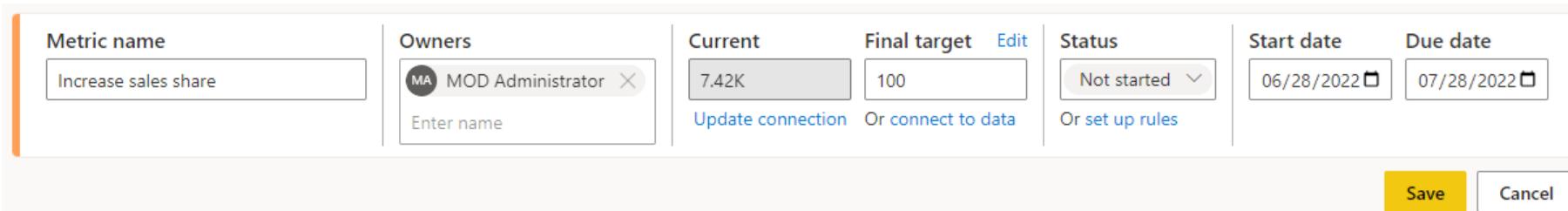
Connect values to data

You can connect either the current or the target value, or both, to a value in a report.

Create a metric or edit an existing metric in a scorecard.

In the **Current** or **Target** field, select **Connect to data**.

In the dialog, search for the report with the data that you want to track, select it > **Next**.



Metric name <input type="text" value="Increase sales share"/>	Owners  MOD Administrator X Enter name	Current 7.42K	Final target 100	Edit	Status Not started ▼	Start date 06/28/2022 ▼	Due date 07/28/2022 ▼
				Update connection Or connect to data	Or set up rules		
Save Cancel							

Refresh, Scorecard vs Metrics

Connected metrics



In the report that you selected, navigate to the visual that contains the data you want to track. Select the data point or visual. Power BI displays the measure card, summarizing all the filters applied to the selection.

The screenshot shows a Power BI interface with a modal window titled "Data selection". The modal displays the following information:

- Filters and slicers affecting this value:**
 - Included (1): VanArsdel (Manufacturer) + East (Region)
 - Year: is 2014
- Measure:** Total Units YTD
- Current value:** 7,421

The background shows a "YTD Category Trend Analysis" report with a treemap visualization and a line chart. The treemap is labeled "Total Units YTD by Manufacturer and Region" and shows segments for VanArsdel (East, Central, West), Alspa (East, Central, West), and others. The line chart shows trends over time. The left sidebar lists "Pages" and "Market Share" sections, with "YTD Category" currently selected. The bottom of the screen has "Connect" and "Cancel" buttons.

Refresh, Scorecard vs Metrics

Connected metrics



Select **Connect**.

Power BI automatically represents values in numeric notation. For example, 2044 is represented as 2K.

Select **Save**.

Metric name <input type="text" value="Increase sales share"/>	Owners MOD Administrator  X <input type="text" value="Enter name"/>	Current 7.42K <small>Update connection</small>	Final target 100 <small>Or connect to data</small>	Edit <small>Not started</small> Status <small>Or set up rules</small>	Start date 06/28/2022 	Due date 07/28/2022 
						<input type="button" value="Save"/> <input type="button" value="Cancel"/>

HEY THIS IS IMPORTANT!

In a 100% stacked bar or column chart, Power BI will pull in the measure value rather than the percentage.

In a multi-row card, Power BI will pull in the first measure in the card. Multi-Geo is currently not supported.

In gauges and KPI tiles, Power BI will pull in the value, but not the target, or the min or max value in the gauge.

In a table with more than one column of measures, Power BI selects the first measure in the row.



Refresh, Scorecard vs Metrics

Creating submetrics



A screenshot of the Microsoft Power BI interface. At the top, there's a navigation bar with the Microsoft logo, "Power BI", and other options like "Share" and "Edit". A red box highlights the "Edit" button. Below the navigation bar, the title "Sales & Returns scorecard" is displayed. In the main area, there's a list of metrics. On the left, there are buttons for "+ New metric" and "Add submetric", with the latter also highlighted by a red box. There are filters for "Name" and a list of metrics, with the first one, "Increase Overall Units Sold", selected and highlighted with a blue border.

Open a scorecard and select **Edit**.

Select the metric you want to create a submetric for and select **Add submetric** on top of the scorecard.

A screenshot of the Power BI scorecard interface. A specific metric, "Increase Overall Units Sold", is selected and highlighted with a blue border. To its right, there are edit icons (pencil, delete, etc.). Above the metric, a "More options" button with three dots is visible, and a dropdown menu is open, showing the option "New submetric" highlighted with a red box.

Or hover over the metric you want to create a submetric for, select **More options (...)** > **New submetric**

Refresh, Scorecard vs Metrics

Automated metrics status



The screenshot shows the Power BI interface with a workspace titled 'Sales sample'. In the center, there's a card for 'Increase sales rate' with a dropdown menu open, showing options like 'is less than', 'is less than or equal to', 'equals', and 'is greater than'. Below this, there are sections for 'Change status to' and 'Otherwise, change status to'. A blue arrow points from the top right towards the status rules configuration area.

The screenshot shows two separate status rules configurations for the 'Increase sales rate' metric. The top one uses a value-based condition ('Value is greater than 100') and a date-based condition ('Date is on or after July 2022'). The bottom one uses a date-based condition ('Date is on or after July 2022'). Both configurations include a 'Save' button.



HEY THIS IS IMPORTANT!

If you chose **Value**, you can either set the value or the percent or target met.

Refresh, Scorecard vs Metrics

Automated metrics



The screenshot shows the Power BI interface with a workspace titled 'Sales sample'. On the left, there's a sidebar with various icons. In the center, a card for 'Sales sample' displays '5 Metrics'. A modal window titled 'Increase sales rate' is open, showing the 'Status rules' tab. It contains a 'New rule' section with conditions: 'If Date is on or after Jul 1, 2022' and 'and Value is less than 10 % of target'. Below this, there are sections for 'Change status to At risk' and 'Otherwise, change status to Behind'. At the bottom right of the modal are 'Save' and 'Cancel' buttons.



HEY THIS IS IMPORTANT!

With automated status rules, you can create multiple conditions to ensure your rules represent your unique business needs. You can also drag the rules to reorder the priority. For the mobile experience, automatic refresh on status rules isn't supported at this time.

Refresh, Scorecard vs Metrics

Custom statuses



STATUSES are an integral part of metric tracking. In some scenarios the statuses that come with a scorecard aren't right for your organization's needs. You may want to customize the statuses to reflect your organization's terminology.

The screenshot shows a Microsoft Power BI Scorecard titled "Northwind FY21 Goals". The top navigation bar includes File, Share, Chat in Teams, Create a flow, Settings, and Read mode. Below the title, a summary card displays the following counts: 14 Goals, 0 Overdue, 1 Behind, 3 At risk, 2 On track, 1 Not started, 0 Completed, 2 Shipped, 2 Line Down, 2 Under Review, and 1 Closed. The main table lists various goals with their details:

Name	Owners	Value	Status	Progress	Due date	Notes
Grow revenue for Northwind to \$6M	Megan Bowne	\$1.601M/\$6M	At risk	<div style="width: 10%;">At risk</div>	Oct 8, 2021	(1)
Grow Northwind Standard to 2.5M	Adele Vance	\$451K/\$500K ↓ 7.96% WoW	Shipped	<div style="width: 92%; background-color: #2e7131;">Shipped</div>	Oct 8, 2021	(2)
Grow Northwind Premium to \$1.5M	Megan Bowne	\$620.0K/\$1.5M ↑ 0% WoW	Under Review	<div style="width: 40%; background-color: #9467bd;">Under Review</div>	Oct 8, 2021	(1)
Grow Northwind Enterprise to \$2M	Megan Bowne	\$530K/\$2M ↑ 1.92% WoW	On track	<div style="width: 100%; background-color: #2e7131;">On track</div>	Oct 8, 2021	(1)
Widespread adoption through total MAU of 1M	Bianca Pisani	780K/1M ↑ 0% WoW	Closed	<div style="width: 100%; background-color: #6c757d;">Closed</div>	Oct 30, 2021	(1)
350K MAU for Northwind Premium	Adele Vance	394K/100K ↑ 0% WoW	Line Down	<div style="width: 39%; background-color: #2e7131;">Line Down</div>	Sep 30, 2021	(1)
150K MAU for Northwind Enterprise	Bianca Pisani	92K/155K ↓ 2.64% DoD	Line Down	<div style="width: 60%; background-color: #2e7131;">Line Down</div>	Oct 30, 2021	(1)
500K MAU for Northwind Standard	Megan Bowne	\$300K/\$600K ↑ 0% WoW	Shipped	<div style="width: 50%; background-color: #2e7131;">Shipped</div>	Oct 18, 2021	(2)
Customer delight through increasing NPS to 4.5	Adele Vance	4.30/5 ↑ 0% MoM	Under Review	<div style="width: 86%; background-color: #9467bd;">Under Review</div>	Sep 11, 2021	

Refresh, Scorecard vs Metrics

Custom statuses



Select the **Settings** gear icon, or
Select the **Statuses** section of the **Edit scorecard settings** pane.

The screenshot shows the Microsoft Power BI interface. At the top, there's a navigation bar with 'Microsoft Power BI' and a team name. Below it, a card displays metrics: 2 (Metrics), 0 (Overdue), 0 (Behind), and 0 (At risk). On the left, a sidebar lists 'Sales & Returns' and 'Scorecard for skateboard sales'. In the center, a table lists items with a note: '1 metric owner doesn't have access to this scorecard.' Buttons for '+ New metric' and 'Add submetric' are visible. A dropdown menu shows filters for 'Name', 'Owners', 'Status', and 'Value'. A 'Search' bar is at the top right.

A modal window titled 'Edit scorecard settings' is open. It has tabs for 'Details', 'Permissions', and 'Statuses' (which is highlighted with a red box). Below these are buttons for '+ Add status' and 'Reset statuses'. Under 'Statuses', there are three sections: 'Overdue' (red square), 'Behind' (pink square), and 'At risk' (yellow square), each with up/down arrows and a delete icon. A large blue arrow points from the main screen to this modal.

On the right side of the main screen, there's another card showing metrics: 0 (Overdue), 0 (Behind), 0 (At risk), 2 (On track), 0 (Not started), and 0 (Completed). Below this is a table with columns: Status, Value, Progress, and Due date. The 'On track' row shows a value of 7.87K/9K, a current value of 1.25, and a final target of 2. The 'Edit' button is highlighted with a red box. A 'Save' button is also present. A 'Manage statuses' button is located below the table.

At the bottom, there's another card with metrics: 0 (Overdue), 0 (Behind), 0 (At risk), 2 (On track), 0 (Not started), and 0 (Completed). Below this is a table with columns: Status, Value, Progress, and Due date. The 'On track' row shows a value of 7.87K/9K, a current value of 1.25, and a final target of 2. The 'Edit' button is highlighted with a red box. A 'Save' button is also present.

The 'Edit scorecard settings' pane is shown again on the right, with the 'Statuses' tab selected. It lists six status categories: Overdue (red), Behind (pink), At risk (yellow), On track (green), Not started (light blue), and Completed (blue). Each category has an 'Edit' button highlighted with a red box. A large blue arrow points from the 'Edit scorecard settings' pane back to the main screen.

Refresh, Scorecard vs Metrics

Custom statuses



The screenshot shows the 'Edit scorecard settings' dialog box. At the top, there are three summary counts: 'Overdue' (0), 'Behind' (0), and 'At risk' (0). Below this is a table with two rows. The first row has a green bar chart labeled 'On track' and a value of '7.87K/9K'. The second row has a green bar chart labeled 'On track' and a value of '1.25/2'. Both rows are highlighted with red boxes. To the right of the table is a 'Statuses' tab with a list of five status items: Overdue (orange square), Behind (pink square), At risk (yellow square), Not started (white square), and Completed (blue square). Each item has a dropdown arrow, an up arrow, a down arrow, and a delete icon.



HEY THIS IS IMPORTANT!

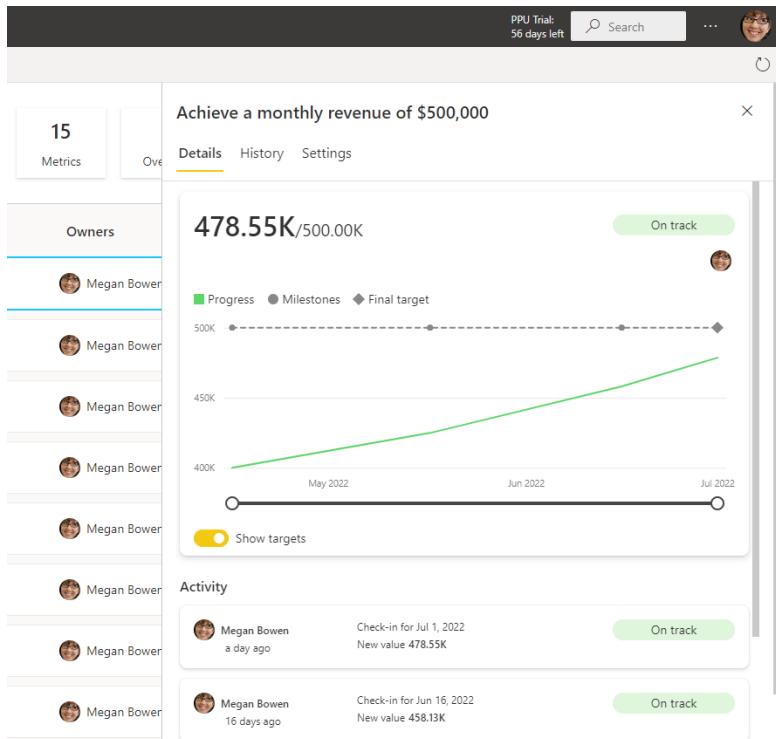
When you delete a status, it's no longer available in your status list. You don't see the deleted status as an option when you perform check-ins. However, we preserve the history in your dataset and check-in history for up to 12 deleted statuses.

Refresh, Scorecard vs Metrics

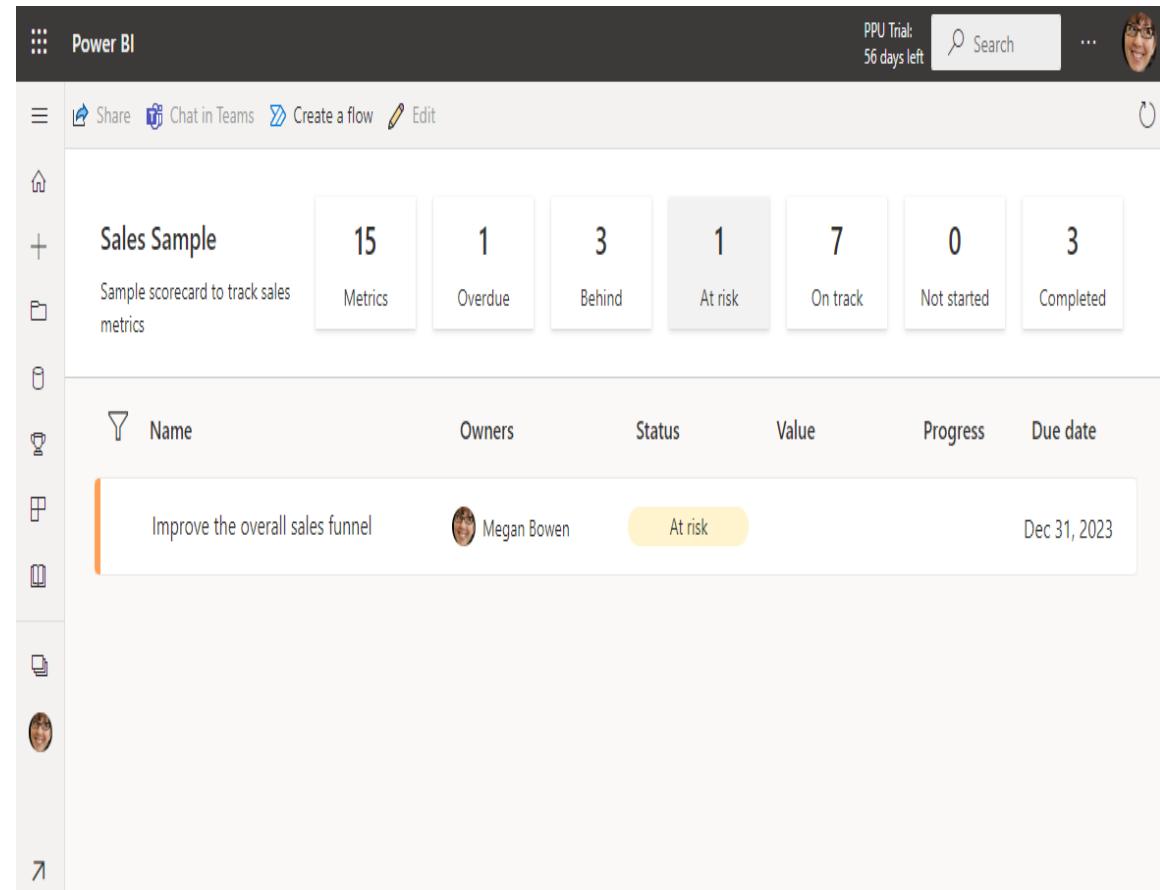
Follow-up metrics



View metric details



Filtering and keyword search



Refresh, Scorecard vs Metrics

Follow-up metrics



Filtering and keyword search

The figure consists of three screenshots of a Power BI dashboard titled "Sales Sample".

Screenshot 1: A basic scorecard summary with metrics: 15 Metrics, 1 Overdue, 3 Behind, 1 At risk, 7 On track, 0 Not started, 3 Completed. Below is a table with columns: Name, Owners, Status, Value, Progress, Due date. One row is highlighted: "Improve the overall sales funnel" (Owner: Megan Bowen, Status: At risk, Due date: Dec 31, 2023).

Screenshot 2: The same scorecard with more details. The table now includes rows for: "Improve the overall sales funnel", "Continue to have over 20000 active prospects in the funnel", "Streamline the sales lead process", "Follow up inquiries by sales team within 12 hours", and "Reduce overall wait-time for calls". The "Continue to have over 20000 active prospects in the funnel" row is expanded, showing a progress chart from 14K to 20K with a 27% DoD.

Screenshot 3: The scorecard with a filtered view. The table shows rows for: "Achieve a monthly revenue of \$500,000" and "Upsell new premium features to 20% of existing customers". The "Achieve a monthly revenue of \$500,000" row is expanded, showing a progress chart from \$478.55K to \$500.00K with a 4% MoM.



Update manual values

Activity

New check-in
Update the metric value and status, and share details in a note

7/1/2022 500

Hide note ^

A B I U

Looks good!

Activity

New check-in

Megan Bowen now Check-in for Jul 1, 2022
New value 500 :

Megan Bowen now Looks good! :

In a scorecard, select the metric name.
In the **Details** pane, select **New check-in**.
Complete the following actions in any order:

- Choose a **date**.
- Enter a new or updated **value**.
- Select a **status**.
- Optionally, include a **note**.

Refresh, Scorecard vs Metrics

Follow-up metrics



Create a subscription

A screenshot of the Microsoft Power BI interface. At the top, there's a navigation bar with icons for Home, Create, File, Share, Chat in Teams, and a red box highlighting the 'Subscribe to scorecard' button. Below the navigation bar, the main area shows a 'Revenue Opportunities' dashboard. A large blue arrow points from the text 'Add new subscription' down towards the 'Subscribe to scorecard' button.

Add new subscription

Subscribe to emails (Preview)
REVENUE OPPORTUNITIES

+ Add new subscription

At risk

Revenue Opportunities Scorecard

Run now On

Subscribe

Megan Bowen Enter email addresses

Frequency

Weekly

Sun Mon Tue Wed Thu Fri Sat

Scheduled time

6 AM (UTC-08:00) Pacific Time (US and C

Emails will be sent weekly at 06:00 AM Pacific Standard Time starting 3/14/2023.

More options

Subject

Revenue Opportunities Scorecard

Include an optional message...

Start date: 3/14/2023 End date: 8/23/2023

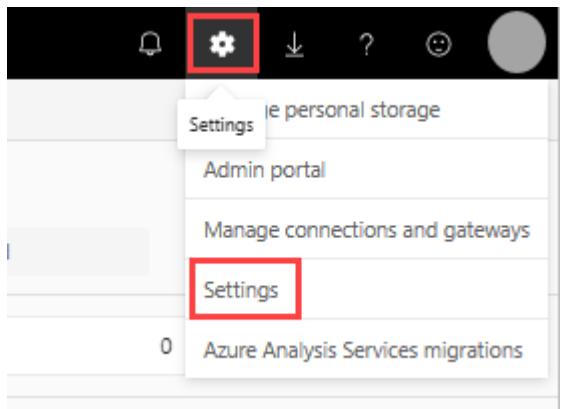
Also include

Permission to access the scorecard in Power BI
 Link to scorecard in Power BI

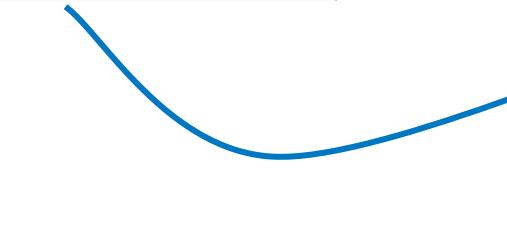
Manage all subscriptions

Save and close Cancel

Manage subscription



Select **Subscribe to scorecard** > select **Manage all subscriptions** > select **Settings** > **Settings**



Subscription name ↑	Workspace	Owner	Content name	Type
Revenue Opportunities Scorecard	My workspace	Megan Bowen	Revenue Opportunities	Scorecard
Sales & Returns Scorecard	My workspace	Megan Bowen	Sales & Returns	Scorecard

HEY THIS IS IMPORTANT!

You can add up to 24 subscriptions per scorecard
You have a Pro license or PPU license



Refresh, Scorecard vs Metrics

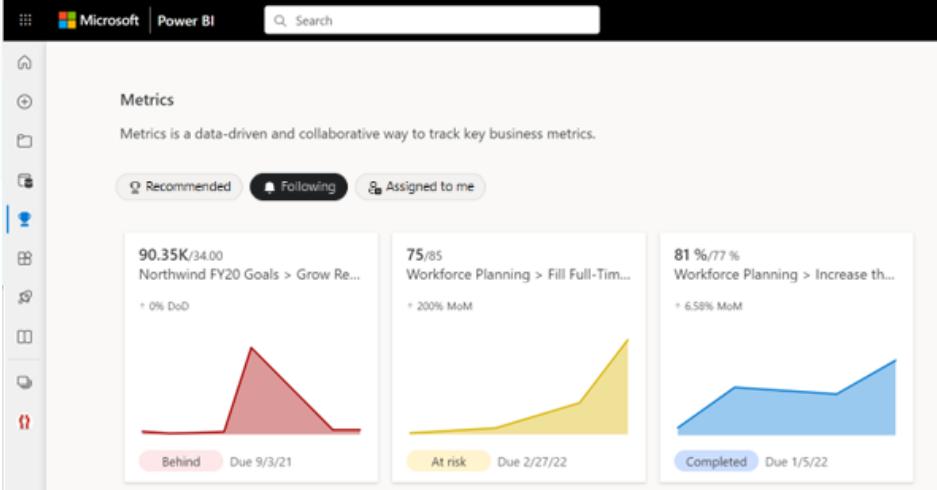
Follow-up metrics



Follow metrics

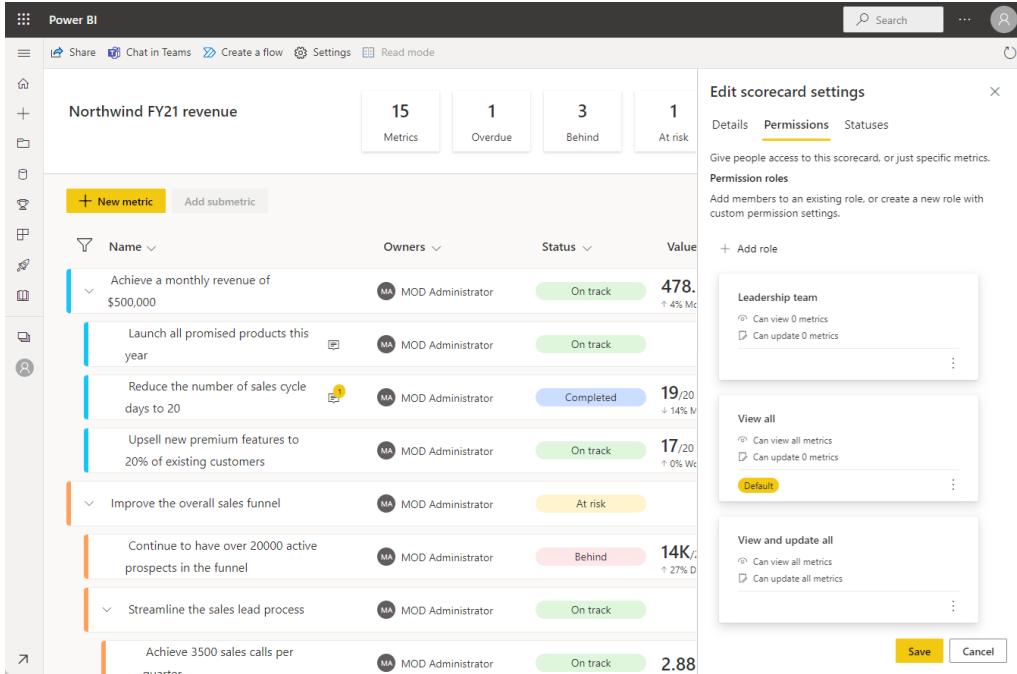
Sales & Returns

✓ Metrics 1 ● Overdue 0 ● Behind 0

Name	Follow metric	Assigned to
		

A screenshot of the Microsoft Power BI Metrics dashboard. The dashboard shows three key performance indicators: 90.35K/34.00 (Behind, Due 9/3/21), 75/85 (At risk, Due 2/27/22), and 81 %/77 % (Completed, Due 1/5/22). A callout bubble points to the 'Follow metric' button next to the first card, which is highlighted with a red box. A blue arrow points from this red box down to the 'Follow metric' button on the main interface above the dashboard.

Protect your scorecard with metric-level permissions

A screenshot of the Power BI Scorecard settings dialog. The main area shows a scorecard titled "Northwind FY21 revenue" with 15 metrics, 1 overdue, 3 behind, and 1 at risk. Below this is a table of metrics with columns for Name, Owners, Status, and Value. One row is expanded to show details like "Achieve a monthly revenue of \$500,000". On the right, the "Edit scorecard settings" dialog is open, showing the "Permissions" tab. It allows setting permissions for roles like "Leadership team", "View all", and "View and update all".

Name	Owners	Status	Value
Achieve a monthly revenue of \$500,000	MOD Administrator	On track	478.00
Launch all promised products this year	MOD Administrator	On track	19/20
Reduce the number of sales cycle days to 20	MOD Administrator	Completed	17/20
Upsell new premium features to 20% of existing customers	MOD Administrator	On track	17/20
Improve the overall sales funnel	MOD Administrator	At risk	14K/100
Continue to have over 20000 active prospects in the funnel	MOD Administrator	Behind	14K/100
Streamline the sales lead process	MOD Administrator	On track	2.88
Achieve 3500 sales calls per quarter	MOD Administrator	On track	2.88

Select the **Edit** pencil > Select the **Settings** > Select the new **Permissions** tab > Select **Add role** or select **More options (...)**

Refresh, Scorecard vs Metrics

Set metric-level permission



Protect your scorecard with metric-level permissions

The image displays two side-by-side screenshots of the Microsoft Power BI "Role settings" interface. Both screenshots show a "Permission" matrix where rows represent metrics and columns represent permissions (View, Update, Current, Status, Notes). The first screenshot shows a "New role" configuration with a single row selected for "Can view 0 metrics" and "Can update 0 metrics". The second screenshot shows a "Leadership team" configuration with multiple rows selected for "Can view all metrics" and "Can update 0 metrics". A blue curly brace on the right side groups these two screenshots together.

View permissions: Grant access for users to view specific metrics within a scorecard.

Update permissions: Grant access for users to update or check in specific aspects of a metric.

Refresh, Scorecard vs Metrics

Arrange metrics



Arrange metrics

The screenshot illustrates the arrangement of metrics in a Power BI scorecard. It shows two versions of the same project, "Tailspin project".

Left Version: Metrics are listed vertically. The table structure is:

Name	Owner	Status	Value
Completion rate	Megan Bowen	On track	20 %/100 % ↑ 100% YoY
Increase MAU	Lidia Holloway	On track	3.40/4.00
Increase location impressions	Lidia Holloway	Behind	\$328/\$500 ↓ 38% WoW
Generate email revenue	Lidia Holloway	Behind	\$328/\$500 ↓ 38% WoW

Right Version: Metrics are arranged horizontally with additional columns for Progress and Due date. The table structure is:

Name	Owner	Status	Value	Progress	Due date	Notes
Completion rate	Megan Bowen	On track	20 %/100 % ↑ 100% YoY	Dec 1, 2021		
Increase MAU	Lidia Holloway	On track	3.40/4.00	Dec 31, 2021		
Increase location impressions	Lidia Holloway	Not started	856/1K	Dec 15, 2021		
Generate email revenue	Lidia Holloway	Behind	\$328/\$500 ↓ 38% WoW	Dec 15, 2021		

Refresh, Scorecard vs Metrics

Arrange metrics



Hide or move metrics>Show

The screenshot shows a Power BI scorecard for the 'Tailspin project'. It displays various metrics such as 'Completion rate' (Owner: Megan Bowen, Status: On track, Value: 20 %/100 %) and 'Increase MAU' (Owner: Lidia Holloway, Status: On track, Value: 3.40/4.00). A context menu is open over the 'Progress' column of the 'Completion rate' row, listing options: 'Move left', 'Move right', 'Hide this column', and 'Show/hide columns'. The 'Show/hide columns' option is highlighted with a red box.

Select the arrow icon next to the column you want to hide or move > **Column settings**. Select **Move right**, **Move left**, or **Hide this column**

This screenshot shows the 'Edit view columns' dialog box. It lists the columns available for the view, including 'Name', 'Owner', 'Status', 'Value', 'Progress', 'Due date', and 'Notes'. The 'Progress' and 'Due date' checkboxes are checked. At the bottom, there are 'Apply' and 'Cancel' buttons, with 'Apply' highlighted by a yellow box.

Select **Show/Hide columns**. In **Edit view columns**, select **Reset to default** or select the column you want to view.

Refresh, Scorecard vs Metrics

Hierarchies metrics



The screenshot shows a Power BI workspace titled "Power BI - Workforce Planning". The main area is titled "FY22 Scorecard" and describes it as a "Team scorecard for tracking FY22 metrics across key business areas". The interface includes a sidebar for "Hierarchy" and a main table with columns for "Owners", "Status", "Value", "Progress", and "Due date". The table lists various business units like Offshore, Onshore Processing, and Power & Water, each with specific targets and current status. A callout box highlights a target for "Increase full time staff % to 85% by end of FY22".

USE CASE #1

Measuring organizational health across teams

USE CASE #2

Retail metrics across locations and product areas

USE CASE #3

Organizational hierarchies

HEY THIS IS IMPORTANT!

 Hierarchies require a Premium or Premium Per User workspace.
You need Edit permission to the scorecard.
Your scorecard needs at least one connected metric.
You need Build access to the datasets connected in your scorecard.

Refresh, Scorecard vs Metrics Hierarchies metrics



The screenshot shows a Microsoft Power BI Scorecard titled "FY22 Scorecard". The scorecard interface includes a top navigation bar with File, Share, Chat in Teams, Create a flow, Settings, and a search bar. Below the navigation is a message: "4 metrics owners don't have access to this scorecard. [Share now.](#)". The main area displays a table with columns: Progress, Due date, and a status indicator (yellow dot). A slicer on the left is set to "All". A dropdown menu is open over the "All" button, showing a list of hierarchy levels: All, Channel Management, Offshore, Onshore Processing, Power & Water, Service, and Subsea & New Energy. At the bottom of this dropdown is a link: "Manage hierarchies (preview)". Above the table, a secondary dropdown menu is open from the "New" button, listing "New metric", "Add submetric", and "Manage hierarchies (preview)", with the last item being highlighted by a blue border.

Select Set up a hierarchy from the New menu <> Select Manage hierarchies from the All slicer

Refresh, Scorecard vs Metrics Hierarchies metrics



Map hierarchy levels to data

Map hierarchy Assign owner

+ New hierarchy

Hierarchies

Operations

Ops Team

Project

Datasets

Workforce Demographics

your scorecard.

Preview hierarchy

View related metrics

Search

Operations

Channel Management

- P-001
- P-002
- P-003
- P-004
- P-005
- P-006
- P-007
- P-008
- P-009

> Offshore

> Onshore Processing

> Power & Water

> Service

> Subsea & New Energy

Related metrics

Review the metrics linked to each dataset.

Retail Analysis Sample

Grow revenue for Northwind to \$6M Current

Workforce Demographics

Deliver financial performance Current

Exceed Revenue targets Current Target

Exceed Gross margin % targets Current Target

Attract and Retain the Best Talent Current

Increase full time staff % to 85% by end of FY22 Current

Ramp up new employee hiring Current

Ramp up new employee hiring Current

Bad attrition rate less than 15% (ICs) Current

Hire for Diverse and Inclusive Teams (Managers) Current

Hire for Diverse and Inclusive Teams (Employees) Current

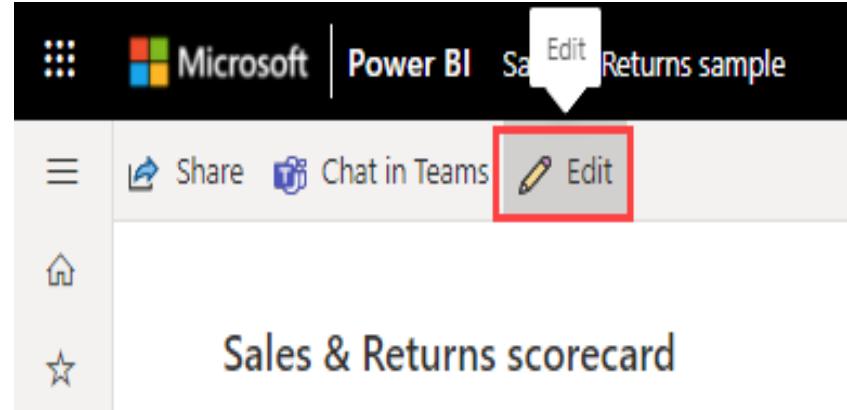
Backlog Forecasted Revenue Current

Opportunity Forecasted Revenue Current

```
graph LR; subgraph Left [Left Side]; direction TB; L1[Map hierarchy] --- L2[Assign owner]; L3[+ New hierarchy]; L4[Hierarchies]; L5((Operations)); L6[Ops Team]; L7[Project]; end; subgraph Right [Right Side]; direction TB; R1[Datasets]; R2[Workforce Demographics]; R3[Preview hierarchy]; R4[View related metrics]; R5[Search]; R6[Operations]; R7[Channel Management]; R8[P-001, P-002, P-003, P-004, P-005, P-006, P-007, P-008, P-009]; R9[Offshore, Onshore Processing, Power & Water, Service, Subsea & New Energy]; R10[Related metrics]; R11[Retail Analysis Sample, Workforce Demographics, etc.]; end; L5 --> R2; R2 --> R10;
```

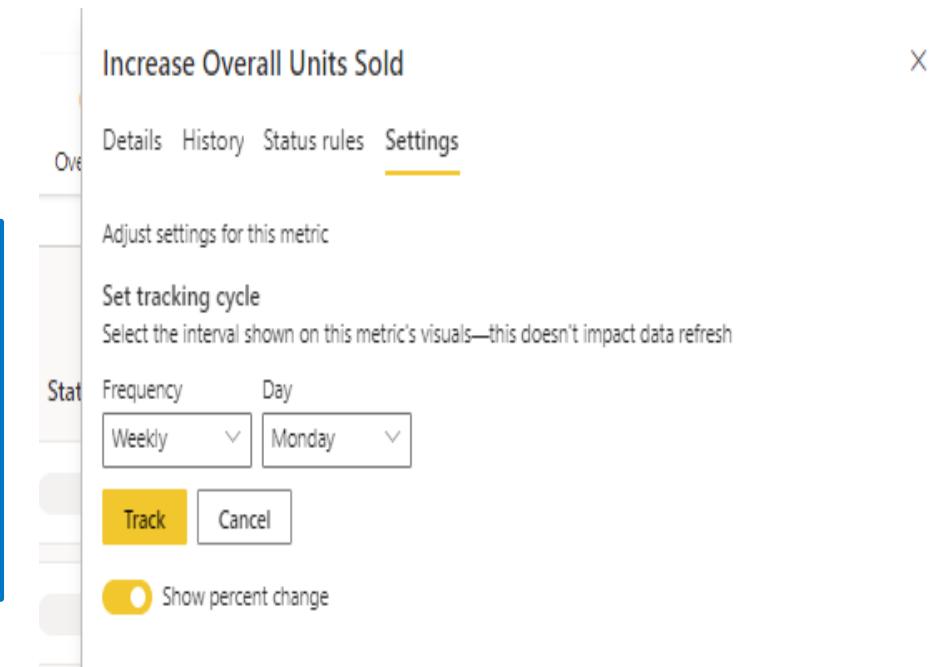
Refresh, Scorecard vs Metrics

Update metrics tracking cycle



Select the name of any metric or submetric. Power BI opens the **Details** pane. Select the **Settings** tab. Set the **tracking cycle** frequency for your metric, and select **Track**.

Open a scorecard and select **Edit**.

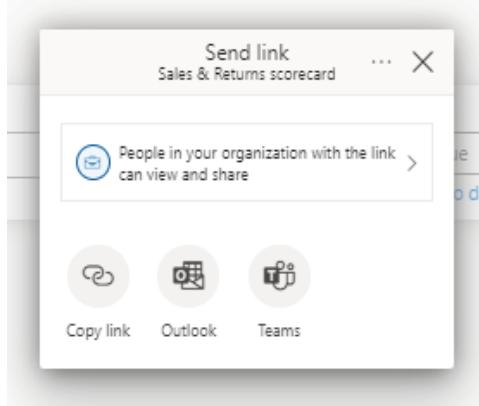


Refresh, Scorecard vs Metrics

Sharing metrics



Select the **Share** button in the scorecard action bar and follow the steps outlined in the experience. It's the same as sharing a dashboard.



HEY THIS IS IMPORTANT!

When you share scorecards, whether inside or outside your organization, your recipients need Power BI Pro licenses, unless the content is in a Power BI Premium capacity



PRO TIP: When you share a scorecard, the people you share it with can view and interact with it. They can also edit it if they have an Admin, Member, or Contributor role in the workspace



POWER BI SERVICE

PART 1: Introduce PBI Ecosystem (PBI Service)

PART 2: Connecting data

PART 3: Prep Data (On Pro & Premium)

PART 4: Data Modeling

PART 5: Report and Dashboard

PART 6: Refresh, Scoreboard vs. Metrics

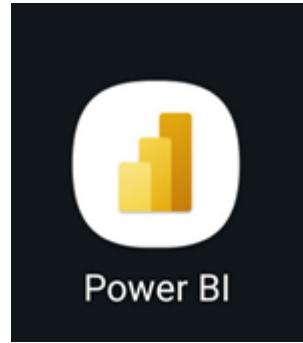
PART 7: Sharing, Collaboration, RLS

PART 8: Deployment Pipelines



Sharing, Collaboration, RLS

Sharing to Mobile view



On your Android device, from the start screen open the Power BI for Android app



Sign in

POWER BI REPORT SERVER

Sign in with your Power BI account credentials for your organization

Enter your work email address

Jen@contoso.com

SIGN IN

By signing in you agree to the Power BI:
[Terms of Use](#)
[Privacy Statement](#)

Sharing, Collaboration, RLS

Sharing to Mobile view



16:12 🔍 ⚡ 65%

Microsoft

← training@mastering-da.com

Nhập mật khẩu

Mật khẩu

Tôi đã quên mật khẩu

Đăng nhập

Điều khoản sử dụng Quyền riêng tư & cookie ...

16:12 🔍 ⚡ 65%

X



Dữ liệu kinh doanh của bạn, mọi lúc, mọi nơi

Xem báo cáo, thêm chú thích và chia sẻ thông tin chuyên sâu về dữ liệu quan trọng với nhóm của bạn, từ bất cứ đâu.

• • •

Tiếp theo



16:12 🔍 ⚡ 65%

Trang chủ

Truy cập nhanh Sổ liệu Hoạt động

Mục truy cập thường xuyên

Manage BI Register_20221115
Đã cập nhật dữ liệu vào tháng 12/19, 2022
Báo cáo

Tiktok Analy...
Đã cập nhật d...
Báo cáo

Mục sử dụng gần đây

Invoice
Báo cáo

Feature Use...
Đã cập nhật d...
Báo cáo

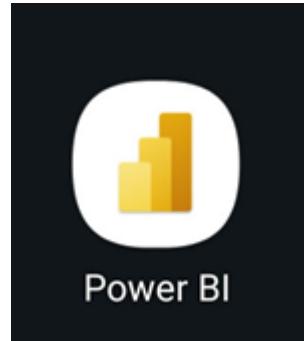
Được đề xuất

Data Analytics Mastering đã nêu bật nội dung n...

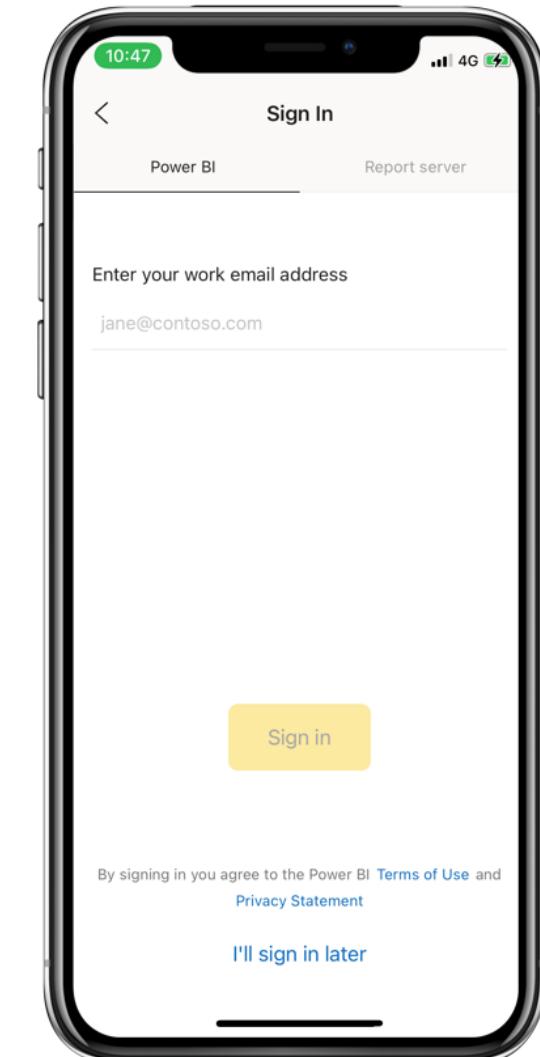
Trang chủ Mục yêu thích Ứng dụng Không gian làm việc Xem thêm

Sharing, Collaboration, RLS

Sharing to Mobile view



On your IOS device, from the start screen open the Power BI for IOS app



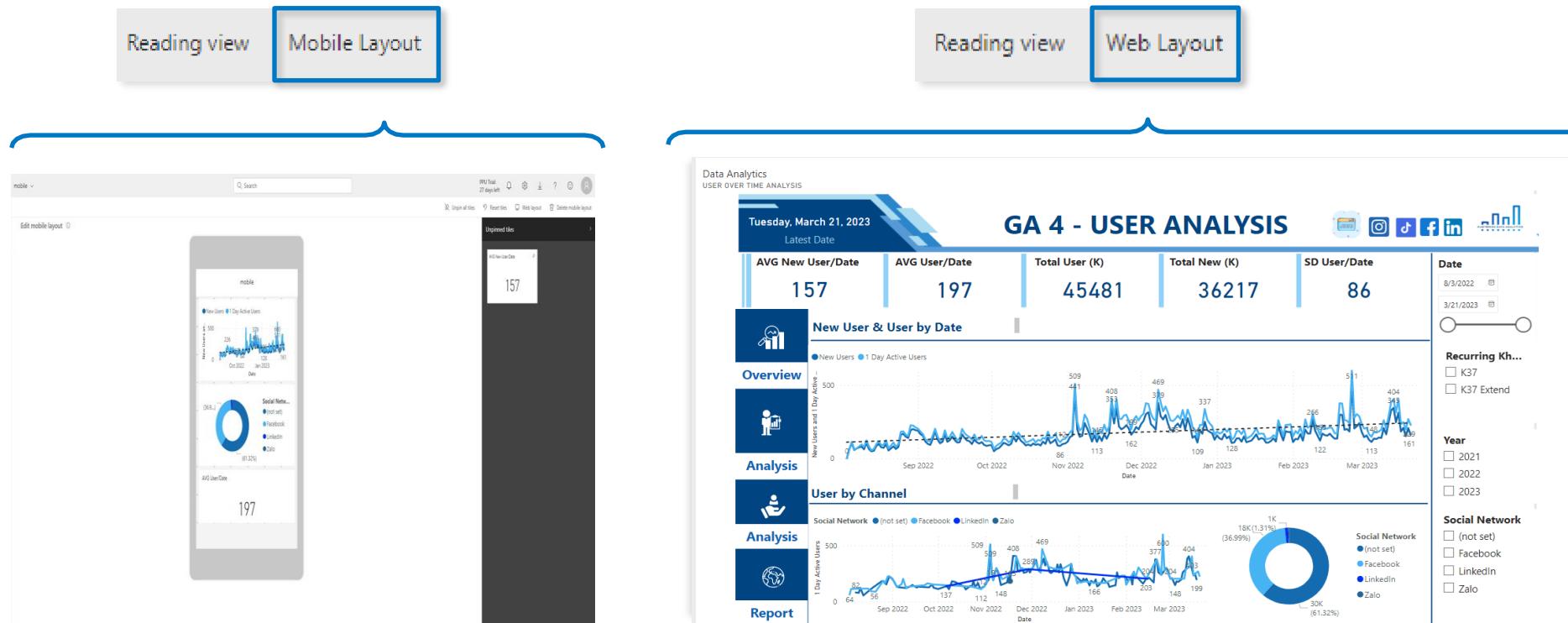
Sharing, Collaboration, RLS

Sharing to Mobile view



Mobile Layout allows you to design reports optimized for mobile viewing (vs. web)

- NOTE: You can't build content within the Mobile Layout view; you need to build in Web Layout and assemble select visuals to share via the Power BI mobile app



Sharing, Collaboration, RLS

Sharing to Mobile view



Power BI's mobile app lets you view your reports and dashboards on the go





1 View & interact with dashboard and reports

- *Interact with report visuals and filters, or use Q&A features to discover new insights*

2 Share dashboards or reports straight from your phone

- *Share links to workspace reports and dashboards to anyone else with a Pro account*

3 Draw & comment anywhere on your screen

- *Add annotations that you can share with your team using text, drawings, icons and more*

4 Notify users & set alerts to stay up-to-date on key changes

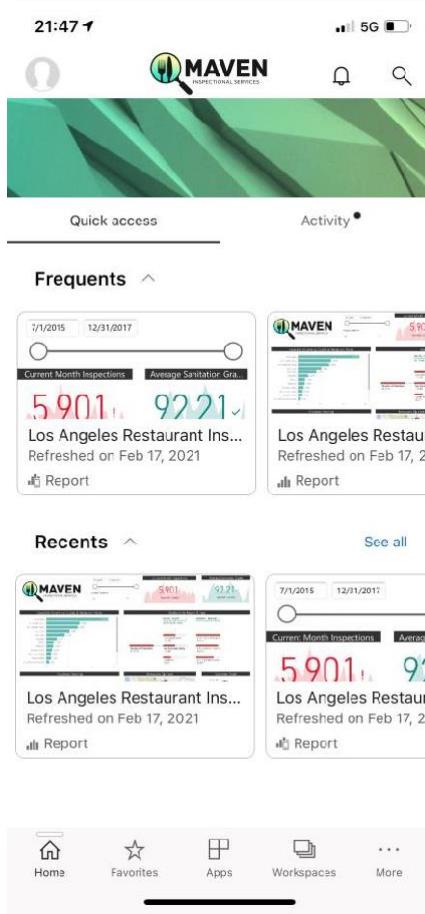
- *Get notifications based on any alerts you've configured, or when you've been @mentioned*

Sharing, Collaboration, RLS

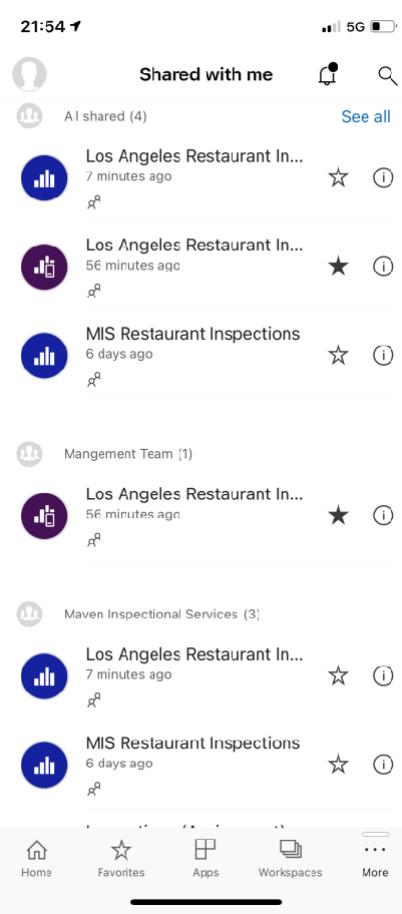
Sharing to Mobile view



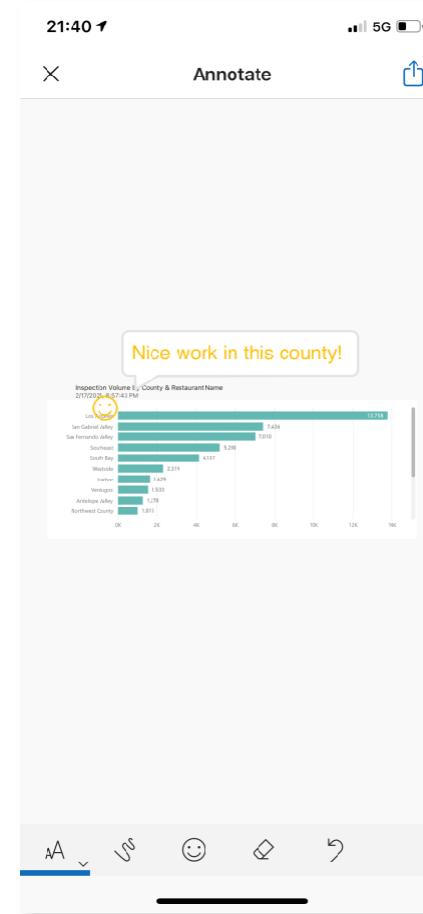
INTERACT



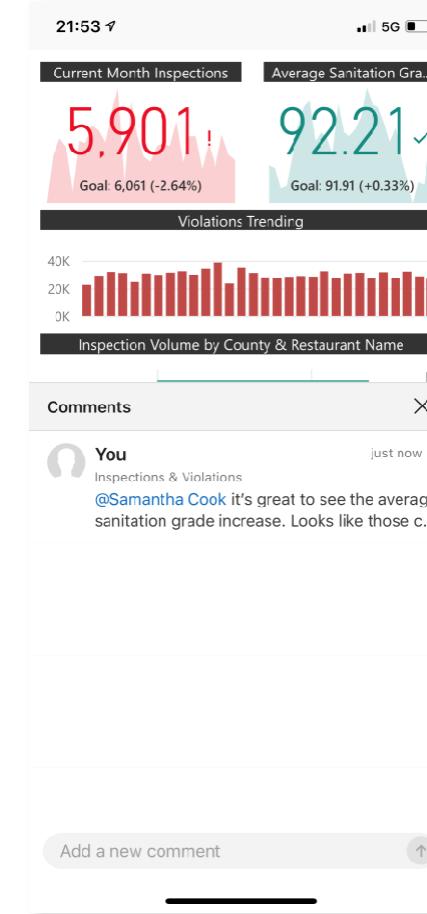
SHARE



DRAW



NOTIFY

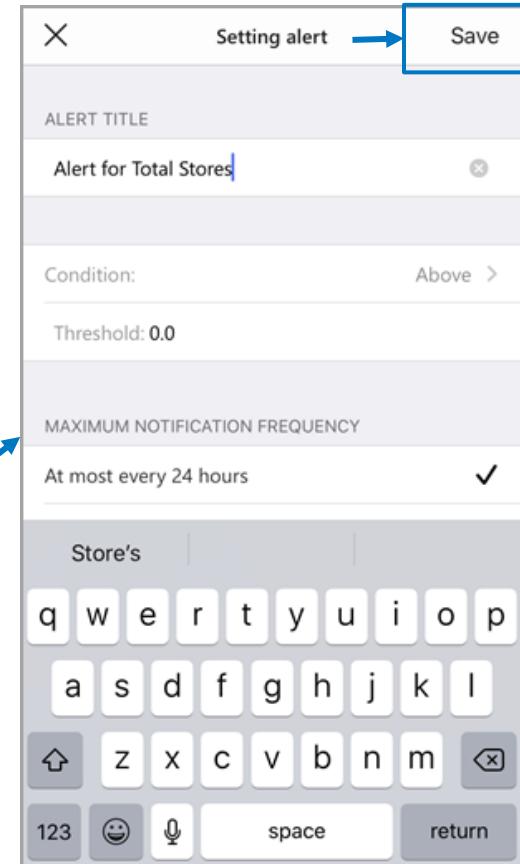
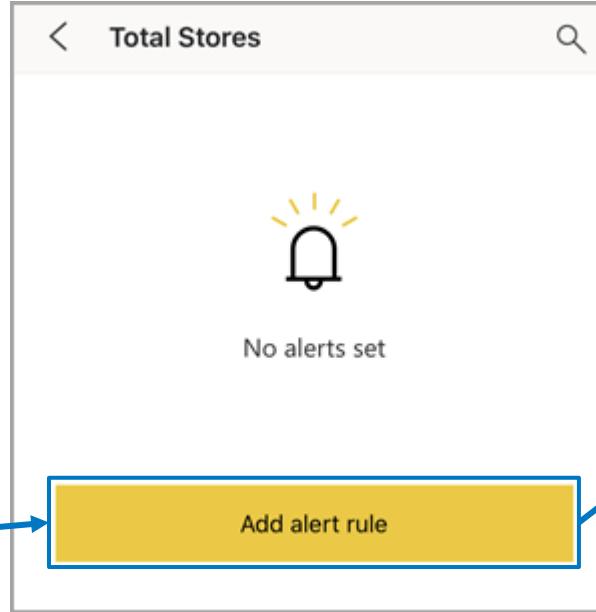


Sharing, Collaboration, RLS

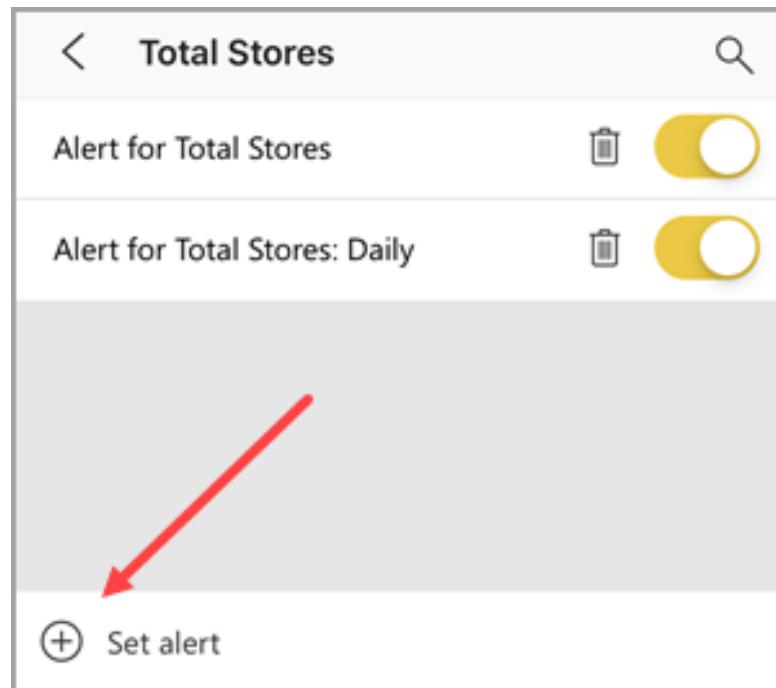
Sharing to Mobile view



1 Add alert rule in IOS



2 List alert and turn on/off or remove alert in IOS

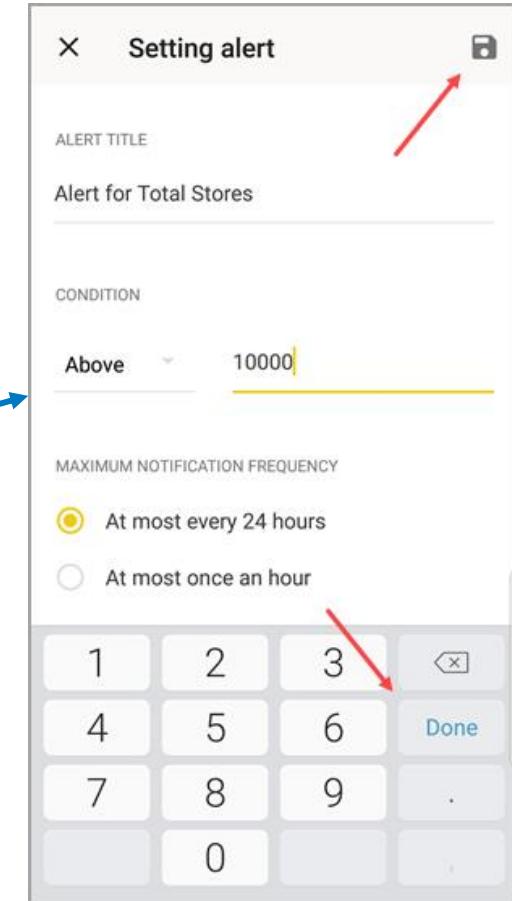
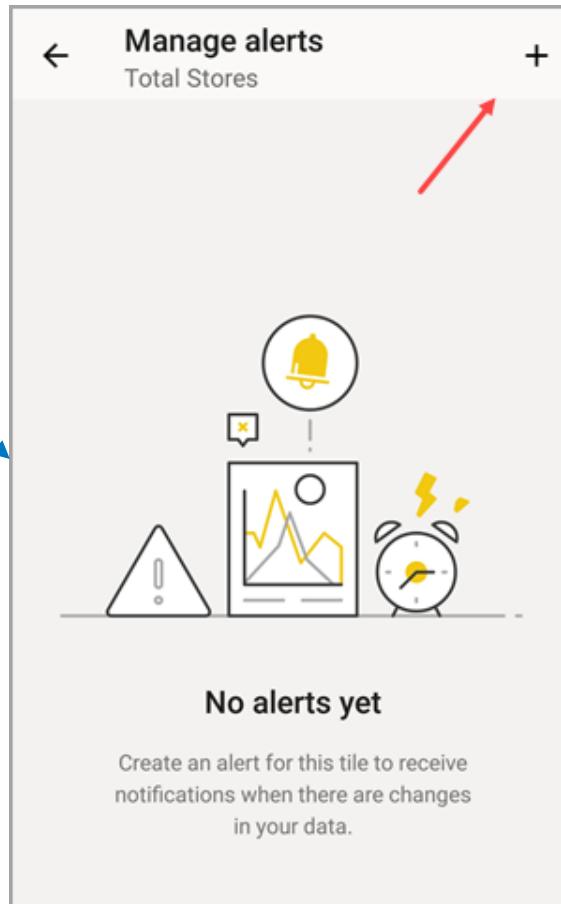
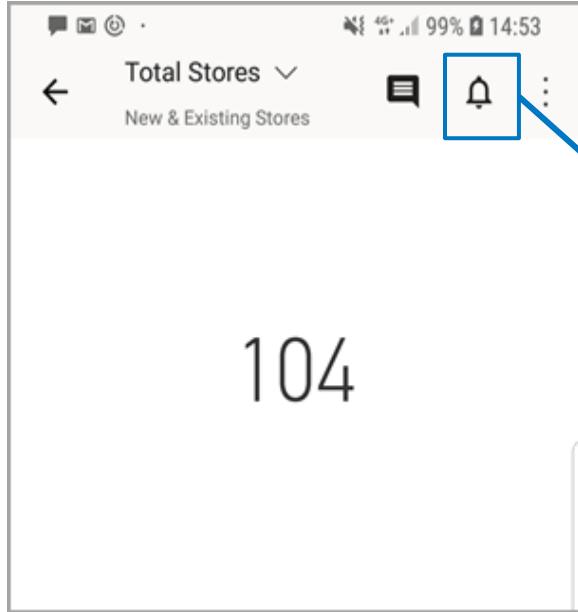


Sharing, Collaboration, RLS

Sharing to Mobile view



1 Add alert rule in android

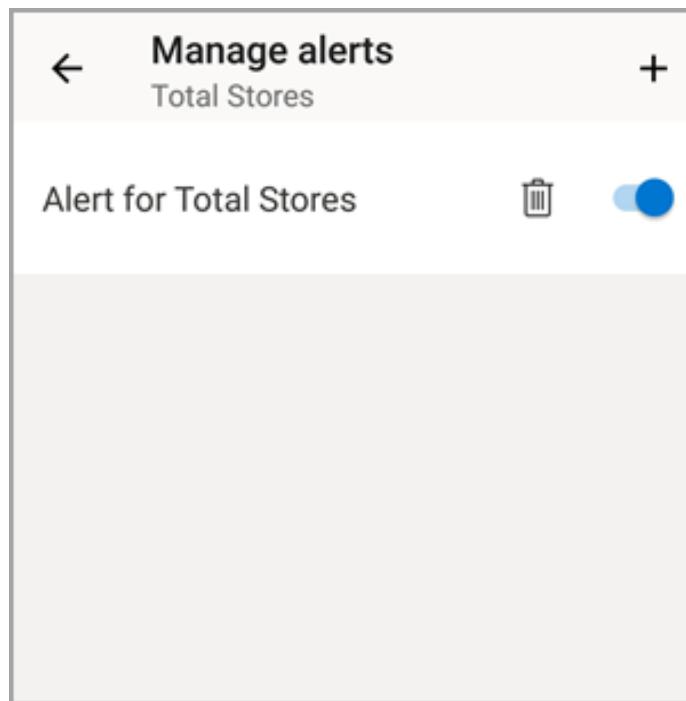


Sharing, Collaboration, RLS

Sharing to Mobile view



2 List alert and turn on/off or remove alert in android





1	<h3>Print or Export a Report</h3>	Ideal for quickly exporting reports or dashboards as static PDFs or PowerPoint documents (great for handouts!)
2	<h3>Share Reports or Dashboards</h3>	Best for sharing individual pieces of content , especially when recipients only need to view and interact with content (not edit)
3	<h3>Share a Workspace</h3>	Easiest way to collaborate with a team by sharing ownership and management of all content (datasets, reports, dashboards, etc.)
4	<h3>Publish an App</h3>	Great for distributing content to large groups or teams, and for publishing specific sets of datasets, reports or dashboards
5	<h3>Embed Securely Online</h3>	Used for securely embedding content to a website you own through SharePoint Online, via URL, or iframe
6	<h3>Publish to Web</h3>	Only use the Publish to Web option if you want your content to be publicly visible to anyone online (use with caution!)

Sharing, Collaboration, RLS

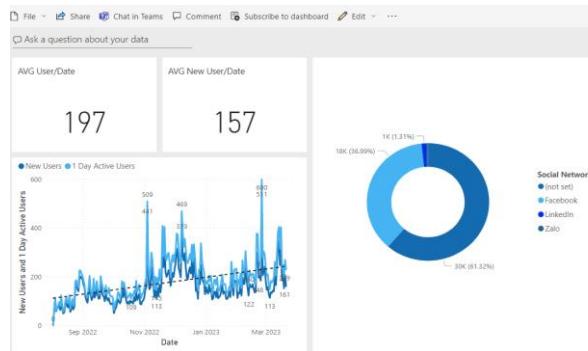
Sharing Options



Reports



Dashboards



Apps



INDIVIDUALS

TEAMS

ORGANIZATIONS



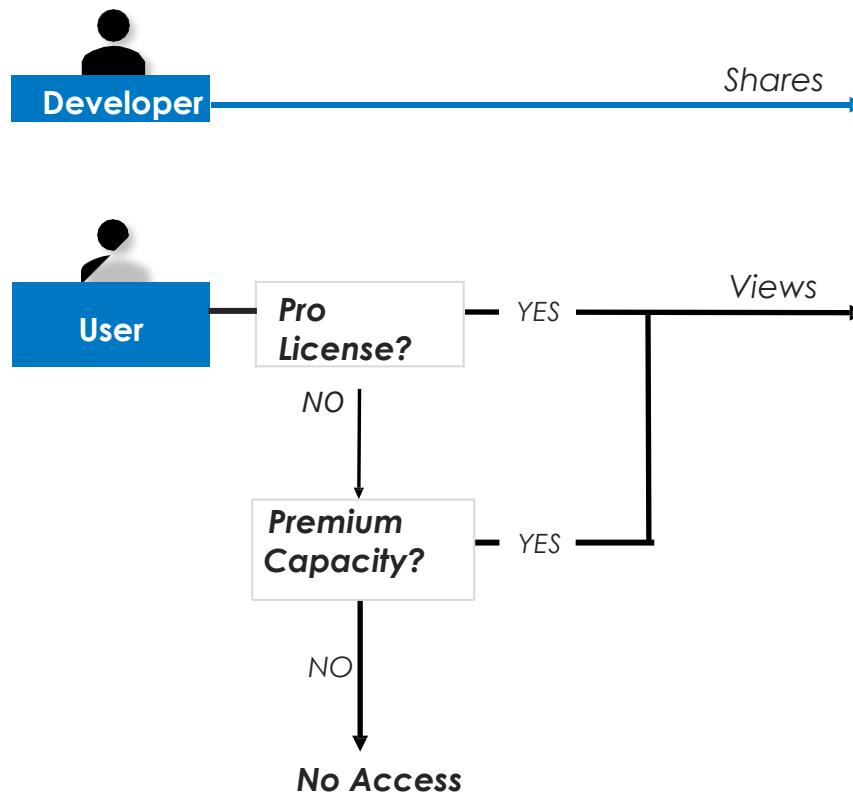
PRO TIP: When sharing reports & dashboards, the maximum number of recipients is 100 at a time (or 500 total); if you need to share with more than 100 recipients, split into multiple sends or use groups

Sharing, Collaboration, RLS

Viewing options



When a developer shares a report or dashboard or publishes an app, users must have either a **pro license** or **access to premium capacity** in order to view



HEY THIS IS IMPORTANT!

Users with Pro licenses can share content with PPU but not the other way around

When sharing workspaces, you can assign roles based on these **levels of permissions**:

VIEWER

- View workbooks, reports, and dashboards
- Can't access datasets, dataflows, or edit content

CONTRIBUTOR

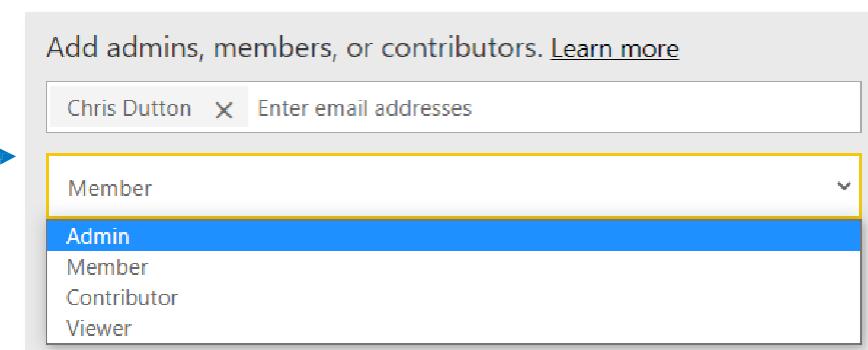
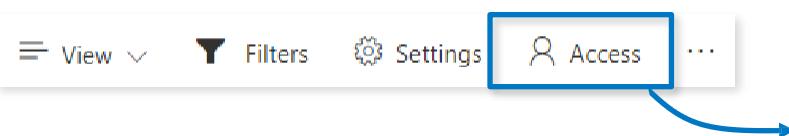
- Lifts Viewer restrictions, plus:**
- Publish, create, edit, and delete content
 - Can't add people to new roles or modify members
 - Can share if the content has been previously shared but can't share new content

MEMBER

- All Contributor rights, plus:**
- Add members or users with lower permission levels
 - Publish and update apps
 - Share an item or app
 - Allow others to reshare

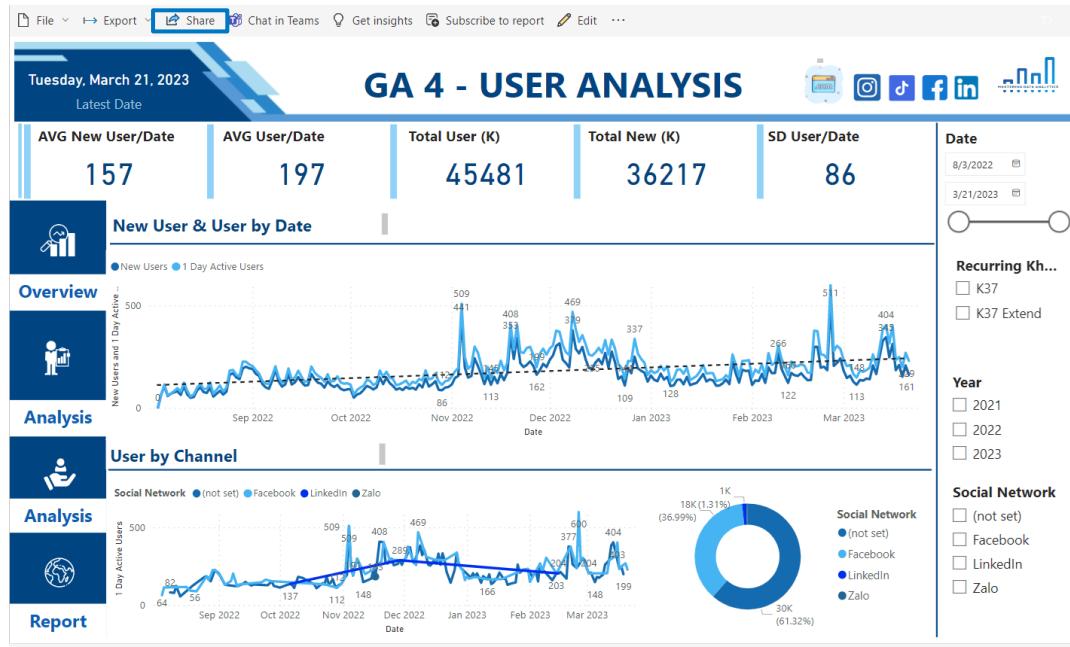
ADMIN

- All Member rights, plus:**
- Update/delete workspaces
 - Add or remove other users (including admins)

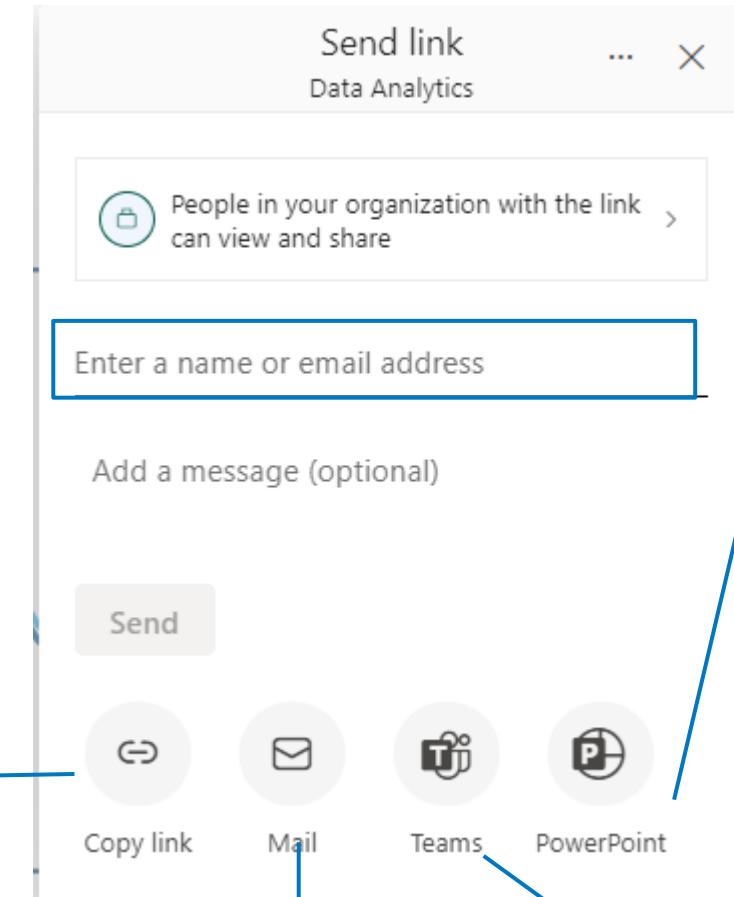


Sharing, Collaboration, RLS

Sharing report



Via Link



Via Mail

People in your organization with the link
can view and share

Enter a name or email address

Add a message (optional)

Send



Via PowerPoints

Via Teams

Sharing, Collaboration, RLS

Subscribe to emails (Dashboard/Report)



Subscribe Power BI reports, dashboards, and paginated reports, you receive an email on a schedule you set. The email contains a snapshot and link to the report or dashboard

The diagram illustrates the process of subscribing to a Power BI report via email. It consists of two main parts connected by a blue arrow.

Left Side: Subscribe to emails dialog

This screenshot shows the "Subscribe to emails" dialog for a "RETAIL ANALYSIS SAMPLE" report. Key fields include:

- Subscribe:** A dropdown menu showing "Michele" and an "Enter email addresses" input field.
- Subject:** An empty subject line input field.
- Include an optional message:** An empty text area.
- Include my changes:** A checked checkbox.
- Report page:** A dropdown menu showing "Store Sales Overview".
- Frequency:** A dropdown menu showing "Daily".
- Scheduled time:** A section with a dropdown for "11 AM" and a "Start date" of "11/7/2022".
- Also include:** Checkboxes for "Permission to access the report in Power BI", "Link to report in Power BI", "Preview image", and "Full report attachment as".
- Email details:** A note stating "Emails will be sent daily at 11:45 AM Eastern Standard Time starting 11/7/2022, 12:00:00 AM."
- Buttons:** "Save and close" and "Cancel".

Right Side: Subscription confirmation email

This screenshot shows an email titled "Subscription for Spend Overview" from Microsoft Power BI. The email includes:

- From:** Microsoft Power BI <no-reply-powerbi@microsoft.com>
- To:** Michele Bowen
- Date:** Thu 6/17/2021 9:07 AM
- Subject:** Spend Overview
- Message Content:** "Please review each week." and a "Go to report" button.
- Report Preview:** A screenshot of the "Spend Overview" report showing a line chart and a map of the United States.
- Text:** "You're receiving this email because you subscribed to the 'Spend Overview' page of the 'Procurement Analysis Sample' report. The image above was generated at June 17, 2021 16:07 UTC."
- Links:** "Manage subscription" and "Privacy Statement".
- Buttons:** "Reply" and "Forward".

Use **Publish to Web** to host reports online publicly

Embed in a public website

Get a link or embed code that you can include on a public website.

You may use the publish to web functionality to share content on a publicly available website. You may not use this functionality to share content internally, including through email, your internal network, or intranet site.

Published a live version that will remain synchronized with the source report in Power BI. Any changes you make to the report will immediately be reflected in the published public version.

[Create embed code](#)

[Close](#)

Embed in a public website

⚠ You are about to create an embed code for this report. Once published, anyone on the internet will be able to access the report and the data it contains, and Microsoft may display the report on a public website or a public gallery.

Before publishing this report, ensure you have the right to share the data and visualizations publicly. Do not publish confidential or proprietary information, or an individual's personal data. If in doubt, check your organization's policies before publishing.

[Publish](#)

[Close](#)

Success! Your report is ready to share

Link you can send in email

<https://app.powerbi.com/view?r=eyJrIjoiNGRmNDI> [Copy](#)

HTML you can paste into a website

<iframe title="Report Section" width="600" height="373.5px>

Size

Placeholder image



Default Page



Pay Attention to this Warning!

You're about to make the report **100% accessible** to anyone on the internet

PRO TIP: Go to Settings > manage embed codes to delete the Publish to Web report

Public Training

Associated Report	Status	Date Created
Google Analytics_MDA	Active	14:50:28 4/5/2023

- An app can have permissions that are different than the permissions set on a workspace. This capability makes it easier for designers to manage permissions on an app.
- An app combines related content, like dashboards, spreadsheets, datasets, and reports, all in one place. An app has one or more of each content type bundled together. There are many ways a designer can share an app

Sharing, Collaboration, RLS Publishing Apps



You can select reports and dashboards to **publish as an app** so large groups of people, both internal and external to your organization, can view them

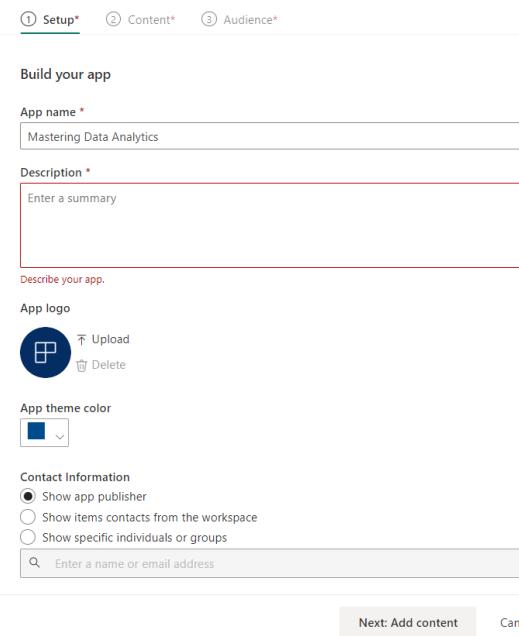
2 Select **Create app** to publish the app

Name	Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity	Included in app
Google Analytics_MDA	Report	Public Training	00:03:07 22/3/23	—	—	—	<input type="checkbox"/> No
Google Analytics_MDA_Template	Report	Public Training	13:19:03 21/3/23	—	—	—	<input type="checkbox"/> No
Metrics	Dashboard	Public Training	—	—	—	—	<input checked="" type="checkbox"/> Yes
Sale Analysis	Dashboard	Public Training	—	—	—	—	<input checked="" type="checkbox"/> Yes
Sample service	Dashboard	Public Training	—	—	—	—	<input checked="" type="checkbox"/> Yes
sample service	Dashboard	Public Training	—	—	—	—	<input checked="" type="checkbox"/> Yes
Template (ENG)	Report	Public Training	13:19:03 21/3/23	—	—	—	<input type="checkbox"/> No
Tiktok Analytics_Manual_Shop	Report	Public Training	17:14:54 26/3/23	—	—	—	<input checked="" type="checkbox"/> Yes

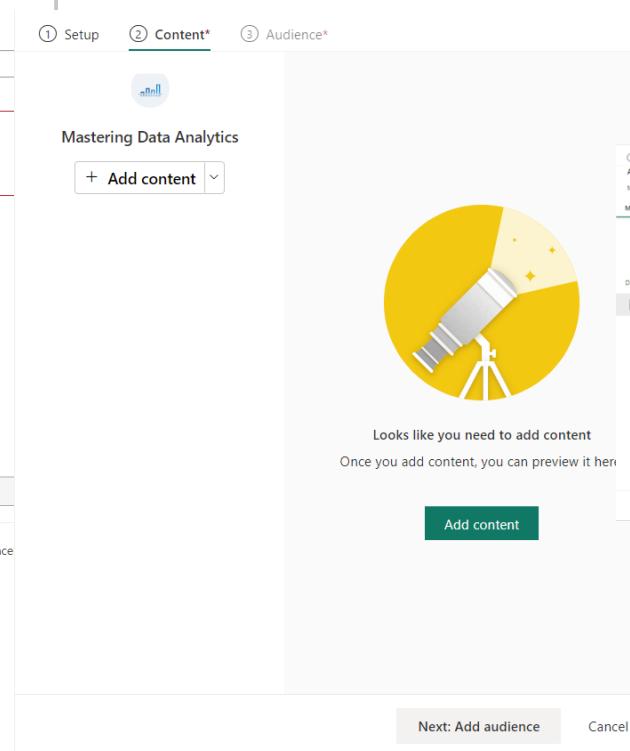
- 1 From within a workspace, select any **reports** and **dashboards** you want to include

After selecting Create app, configure the **setup**, **navigation**, and **permissions**

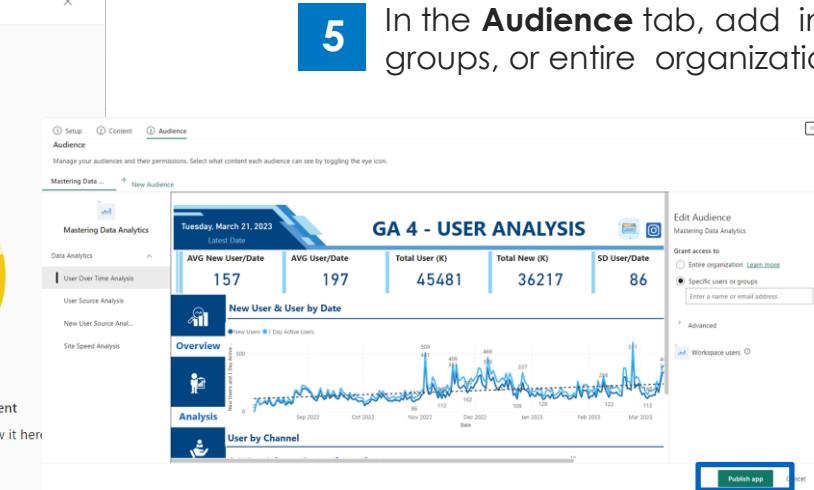
- 3** In the **Setup** tab, name the app, add a description, logo, and color theme



- 4** In the **Content** tab, use the navigation builder to customize the order, name, and navigation width



- 5** In the **Audience** tab, add individuals, groups, or entire organizations to the App



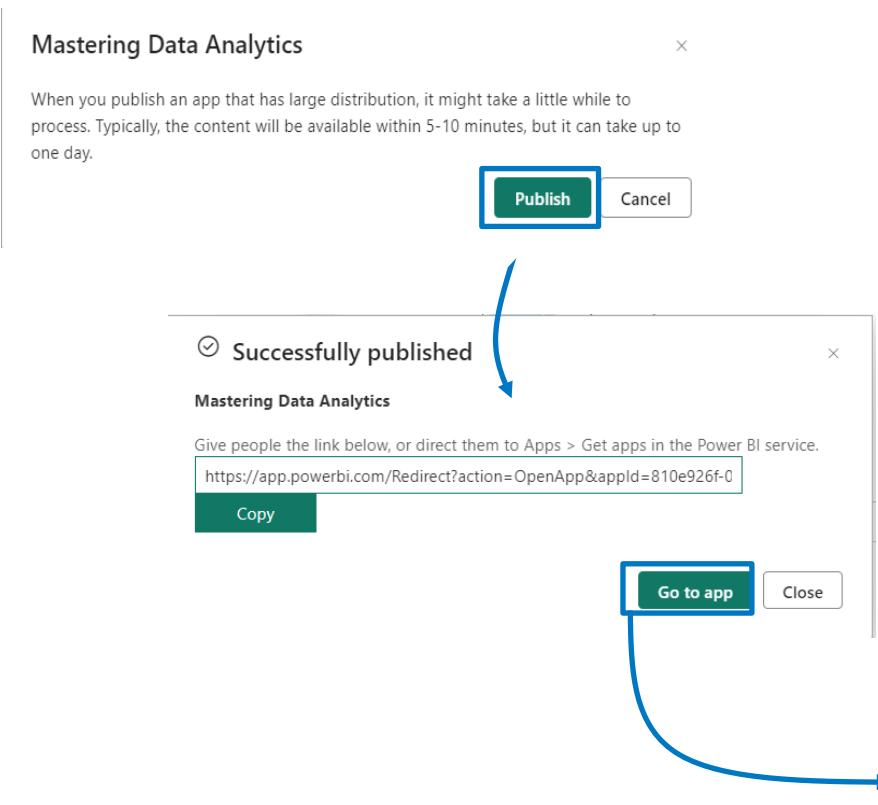
- 6** Publish the app!

255

Sharing, Collaboration, RLS Publishing Apps



After publishing the app, you'll be provided a link for direct access



Menu options allow users to do things like **print**, chat in **Teams**, add **comments**, **subscribe**, **favorite**, **edit** (permissions depending), etc.



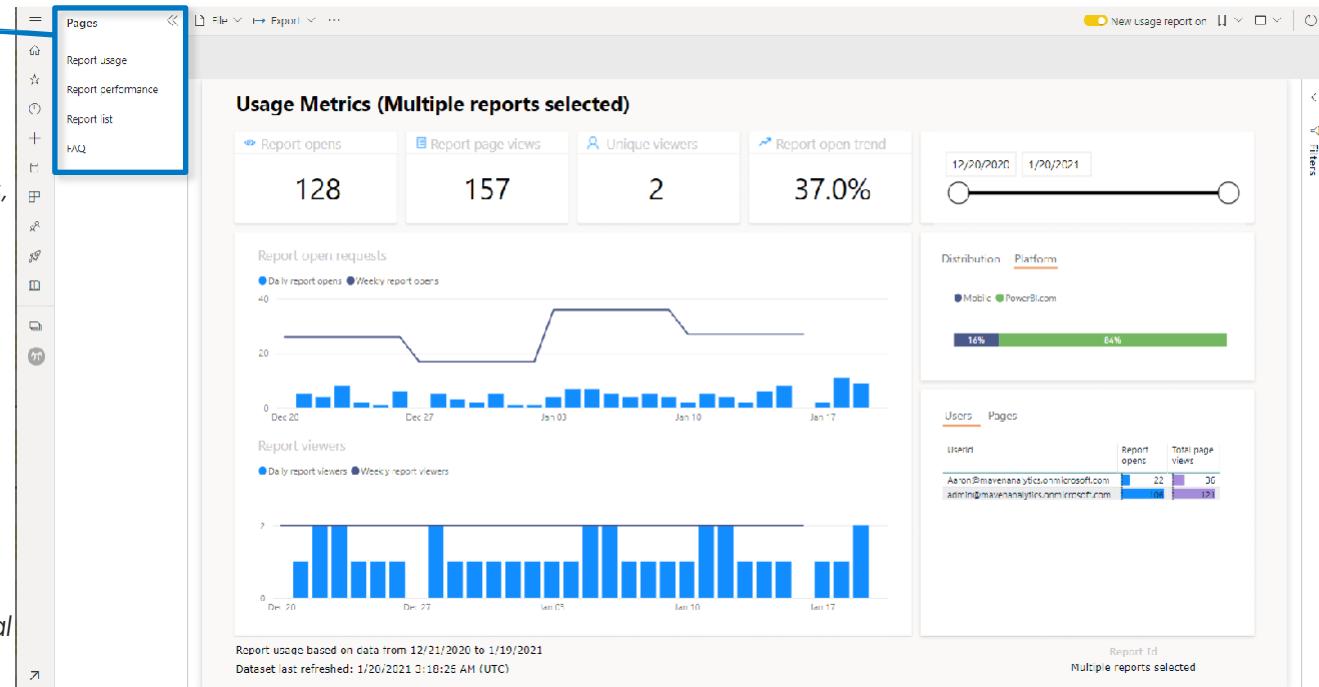
Sharing, Collaboration, RLS

Usage reports



The **usage metrics** tool monitors how your dashboards and reports are being used

- **REPORT USAGE**
Displays metrics like opens, views, viewers, users, etc.
- **REPORT PERFORMANCE**
Displays typical open time, browser, device, etc.
- **REPORT LIST**
Shows key metrics by report across entire workspace
- **FAQ**
Like term & calculation definitions, plus links to additional info



PRO TIP: Choose “Save report as” from the file menu to access the underlying data to build and customize your own usage metrics report

Sharing, Collaboration, RLS

Sharing dataflow



9. BI_Sales Contoso

+ New ▾ Upload ▾ Create deployment pipeline Create app

Name	Type	Owner
Contoso DASHBOARD	Dashboard	9. BI_Sales C
Contoso Database	Dataflow	Data Analyt
Contoso Sale Department		
Contoso Sale Department		
Contoso Sales Report		
MKTdshfds		
MKTdshfds		

The screenshot shows a Microsoft Power BI workspace titled "9. BI_Sales Contoso". The main area displays a list of items: "Contoso DASHBOARD" (Dashboard), "Contoso Database" (Dataflow), "Contoso Sale Department" (Table), "Contoso Sale Department" (Table), "Contoso Sales Report" (Table), and two entries for "MKTdshfds" (Table). The "Contoso Database" row is selected, and a context menu is open over it, showing options: Delete, Edit, Export.json (which is highlighted with a red box), Properties, Refresh history, Settings, and View lineage.

Sharing, Collaboration, RLS

Sharing datamart

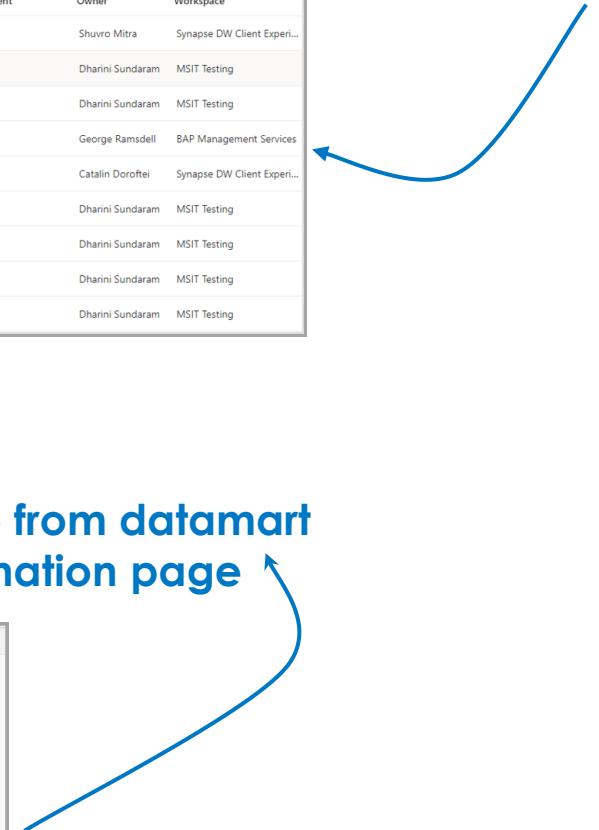


Share from a workspace

A screenshot of a workspace interface. On the left, there's a list of datasets and datamarts: Customer360, DatamartTest, DatamartTest, HelloMart, HelloMart, MarketingTeam Datamart, MarketingTeam Datamart, and SalesMart. A context menu is open over the second 'DatamartTest' item. The menu options are: Analyze in Excel, Create report, Delete, Manage permissions, Refresh history, Rename, Settings, Share (which is highlighted with a red box), and View lineage.

All	Name	Type	Endorsement	Owner	Workspace
	Usage Report	Dataset	-	Shuvro Mitra	Synapse DW Client Experi...
	Customer360	Datamart	-	Dharini Sundaram	MSIT Testing
	Customer360	Analyze in Excel	Create report	Dharini Sundaram	MSIT Testing
	Azure Spend - SPARTAN - Daily - V	Create report	Delete	George Ramsdell	BAP Management Services
	Project Tracking	Delete	Manage permissions	Catalin Doroftei	Synapse DW Client Experi...
	Untitled 2022-05-05T21:50:31.298Z	Manage permissions	Refresh history	Dharini Sundaram	MSIT Testing
	Untitled 2022-05-05T21:50:31.298Z	Refresh history	Rename	Dharini Sundaram	MSIT Testing
	Untitled 2022-05-03T16:07:20.430Z	Rename	Settings	Dharini Sundaram	MSIT Testing
	Untitled 2022-05-03T16:07:20.430Z	Settings	Share	Dharini Sundaram	MSIT Testing
	Untitled 2022-05-03T16:07:20.430Z	Share	View lineage	Dharini Sundaram	MSIT Testing

Share from the data hub



Share from datamart information page

A screenshot of the datamart information page. At the top, there are navigation links: File, Refresh, Share, Create a report, Analyze in Excel, Lineage, and Edit. Below that is a section titled "Datamart details" with fields for Workspace (MSIT Testing) and Description (Add a description). There are two buttons: "Visualize this data" and "Share this data". The "Share this data" button is highlighted with a red box. Below this is a section titled "See what already exists" with a yellow icon. At the bottom, there's a table showing datamart details:

Name	Type	Endorsement	Workspace	Unique viewers	Views
Customers by Orders	Report	-	MSIT Testing	0	0
Customers by Products	Report	-	MSIT Testing	0	0

Sharing, Collaboration, RLS

Sharing datamart



Share datamart
Datamart_0223

ⓘ Sharing a datamart with recipients allows them to build content based on the underlying dataset and query the corresponding SQL endpoint.

someone@contoso.com X

Enter a name or email address

Allow recipients to share this datamart

Add a message (optional)

Grant access Cancel

File Refresh Share Create a report Analyze in Excel Lineage Edit

Datamart details

Workspace MSIT Testing

Description Add a description

SQL connection string x6eps4xrq2xudenlfv6naeo3i4-vyizs3l4tf5e3jw7sjshlune5...

See what already exists Discover reports that already use this data.

Name	Type	Endorsement	Workspace
Customers by Orders	Report	-	MSIT Testing
Customers by Products	Report	-	MSIT Testing



Situation 1: When a Premium workspace is changed from Premium to non-premium

The screenshot shows a list of datamarts in the Power BI service. On the left, there is a list of four datamarts: 'DMTPCH1GB' (orange icon), 'DMTPCH1GB' (black icon with a red warning triangle), 'DMTPCH1TB' (orange icon), and 'DMTPCH1TB' (black icon). A large callout box on the right contains the following text:
Data mart is unavailable
Unable to open the datamart. Wait a few seconds, and then try again.
[Try again](#)
The word 'Datamart' is visible at the bottom right of the callout box.

Situation 2: When dataflow updates a datamart and associated dataset, but due to a system lock the datamart or dataset update is pending, the datamart becomes unavailable

Sharing, Collaboration, RLS

Access control in datamart



Define RLS and rules

The screenshot shows the Power BI Row security settings interface. It consists of two main dialog boxes: the first is the "Row security settings" dialog with the "Create" tab selected, and the second is the "Row security settings" dialog with the "Assign" tab selected. A blue arrow points from the "Create" dialog to the "Assign" dialog.

Create Tab (Left Dialog):

- Header:** Row security settings.
- Buttons:** Create (highlighted), Assign.
- Text:** Create security roles to manage the rows people can access.
- Sections:**
 - Roles:** Create role, Category1or2.
 - Select tables:** Categories, Customers, Employees, Invoices, Order_Details, Orders, Products, Regions, Shippers, Suppliers.
 - Add filters:** Select tables to create filters. Any of these rules are true:
 - CategoryID Equals 1
 - CategoryID Equals 2
- Buttons:** Save, Close.

Assign Tab (Right Dialog):

- Header:** Row security settings.
- Buttons:** Create, Assign (highlighted).
- Text:** Add people or groups to roles to manage access to data.
- Sections:**
 - Roles:** Category1or2.
 - Members (1):** People or groups who belong to this role. Category1or2.

Sharing, Collaboration, RLS

Access control in datamart

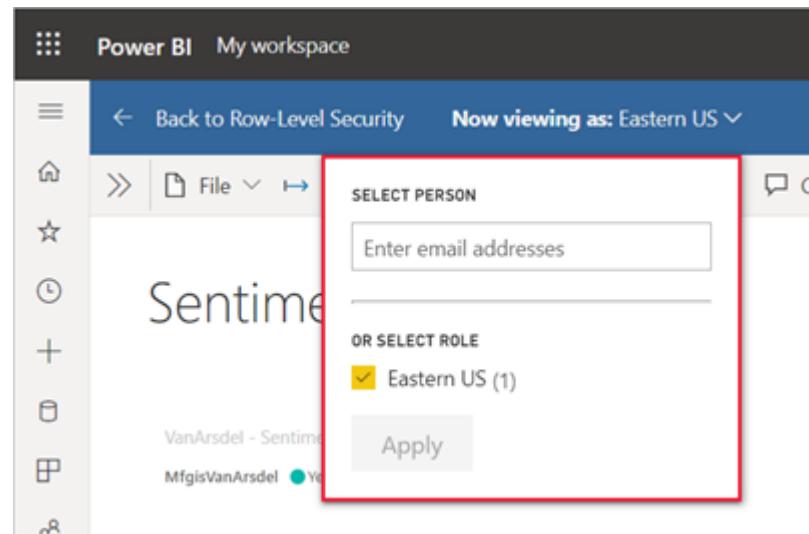


Define RLS and rules

The screenshot shows the Microsoft Power BI Data Mart Documentation interface. At the top, there's a navigation bar with "Microsoft Power BI Data Mart Documentation". Below it is a toolbar with "Home", "Get Data", "Transform Data", "Enter Data", "New Query", "New measure", "Manage roles", and a "View as" button, which is highlighted with a red box. A blue arrow points from the "View as" button to a modal window titled "View As Role". This modal has two options: "None" (unchecked) and "Category1or2" (checked). Another blue arrow points from the "View as" button to another modal window titled "View As Role", which also has "None" (checked) and "Category1or2" (unchecked). To the right of these modals is a "Table tools" section showing a table with columns: OrderID, CustomerID, EmployeeID, OrderDate, RequiredDate, and ShippedDate. The table contains 21 rows of data from the Northwind database.

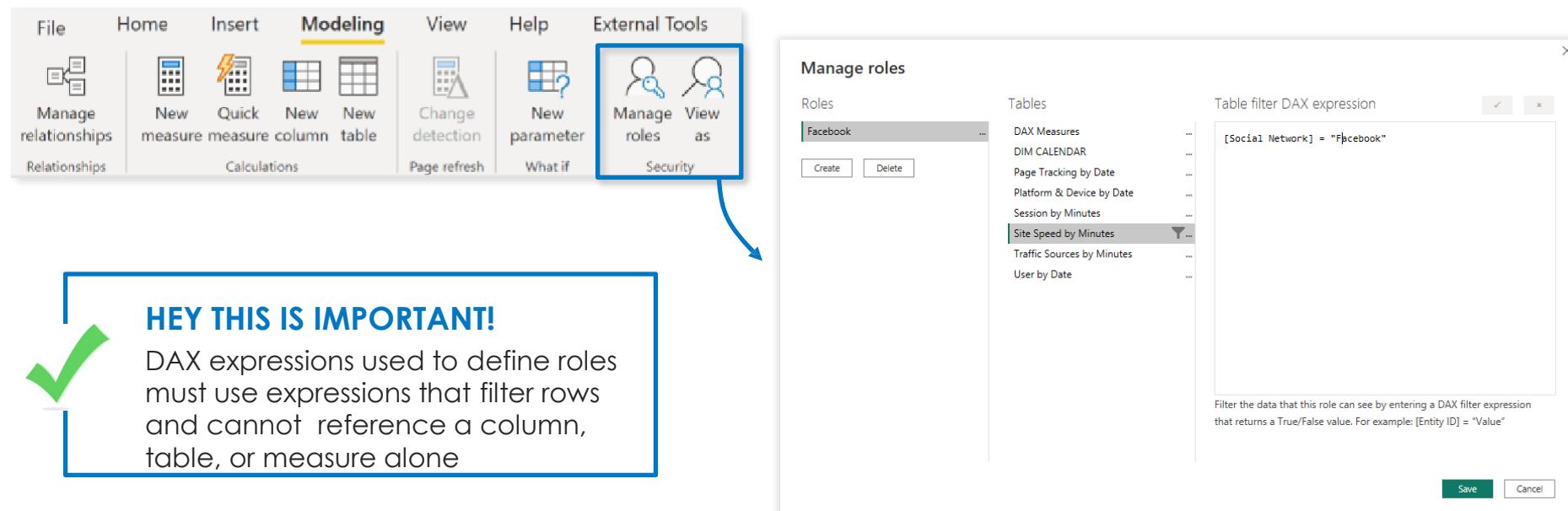
	OrderID	CustomerID	EmployeeID	OrderDate	RequiredDate	ShippedDate
1	10249	TOMSP	6	7/5/1996, 12:00:00 AM	8/6/1996, 12:00:00 AM	7/10/1996, 12:00:00 AM
2	10280	OTTIK	4	7/19/1996, 12:00:00 AM	8/16/1996, 12:00:00 AM	7/29/1996, 12:00:00 AM
3	10267	FRANK	4	7/29/1996, 12:00:00 AM	8/26/1996, 12:00:00 AM	8/6/1996, 12:00:00 AM
4	10273	QUICK	3	8/5/1996, 12:00:00 AM	9/2/1996, 12:00:00 AM	8/12/1996, 12:00:00 AM
5	10277	MORGK	2	8/9/1996, 12:00:00 AM	9/6/1996, 12:00:00 AM	8/13/1996, 12:00:00 AM
6	10279	LEHMS	8	8/13/1996, 12:00:00 AM	9/10/1996, 12:00:00 AM	8/16/1996, 12:00:00 AM
7	10284	LEHMS	4	8/19/1996, 12:00:00 AM	9/16/1996, 12:00:00 AM	8/27/1996, 12:00:00 AM
8	10285	QUICK	1	8/20/1996, 12:00:00 AM	9/17/1996, 12:00:00 AM	8/26/1996, 12:00:00 AM
9	10286	QUICK	8	8/21/1996, 12:00:00 AM	9/18/1996, 12:00:00 AM	8/30/1996, 12:00:00 AM
10	10301	WANDK	8	9/9/1996, 12:00:00 AM	10/7/1996, 12:00:00 AM	9/17/1996, 12:00:00 AM
11	10312	WANDK	2	9/23/1996, 12:00:00 AM	10/21/1996, 12:00:00 AM	10/3/1996, 12:00:00 AM
12	10313	QUICK	2	9/24/1996, 12:00:00 AM	10/22/1996, 12:00:00 AM	10/4/1996, 12:00:00 AM
13	10323	KOENE	4	10/7/1996, 12:00:00 AM	11/4/1996, 12:00:00 AM	10/14/1996, 12:00:00 AM
14	10325	KOENE	1	10/9/1996, 12:00:00 AM	10/23/1996, 12:00:00 AM	10/14/1996, 12:00:00 AM
15	10337	FRANK	4	10/24/1996, 12:00:00 AM	11/21/1996, 12:00:00 AM	10/29/1996, 12:00:00 AM
16	10342	FRANK	4	10/30/1996, 12:00:00 AM	11/13/1996, 12:00:00 AM	11/4/1996, 12:00:00 AM
17	10343	LEHMS	4	10/31/1996, 12:00:00 AM	11/28/1996, 12:00:00 AM	11/6/1996, 12:00:00 AM
18	10345	QUICK	2	11/4/1996, 12:00:00 AM	12/2/1996, 12:00:00 AM	11/11/1996, 12:00:00 AM
19	10348	WANDK	4	11/7/1996, 12:00:00 AM	12/5/1996, 12:00:00 AM	11/15/1996, 12:00:00 AM
20	10356	WANDK	6	11/18/1996, 12:00:00 AM	12/16/1996, 12:00:00 AM	11/27/1996, 12:00:00 AM
21	10361	QUICK	1	11/23/1996, 12:00:00 AM	12/20/1996, 12:00:00 AM	12/3/1996, 12:00:00 AM

Row-level security (RLS), which are used to restrict data access to users at the row level and limit what they're able to view



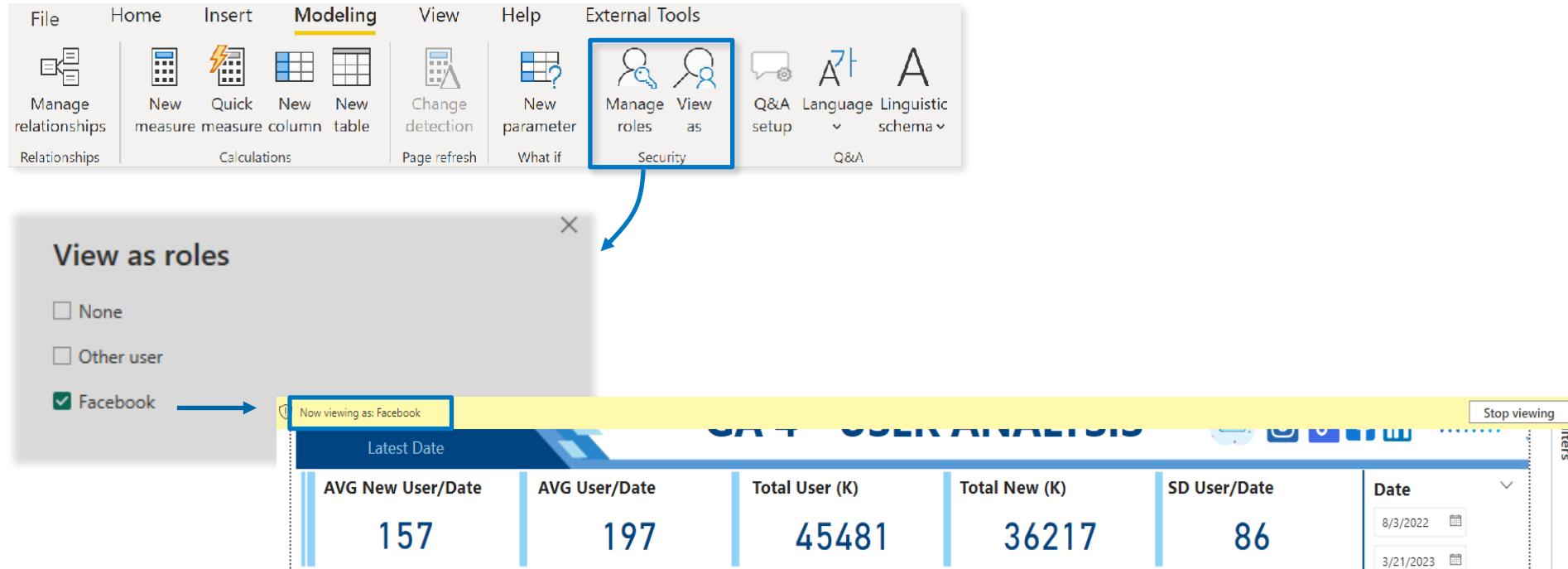
Static roles allow you to define filtered views for specific audiences (territory managers, department leads, execs, etc.) using simple DAX statements

- This is not the same as bookmarks or pre-filtered views; roles filter data out of your model and limit what audiences can access
- Static roles must first be configured in Power BI Desktop and then applied in Power BI Service



The screenshot shows the Power BI Desktop interface. On the left, the ribbon has the 'Modeling' tab selected. Below the ribbon, there are several icons: 'Manage relationships', 'New measure', 'Quick measure', 'New column', 'New table', 'Change detection', 'Page refresh', 'New parameter', 'What if', and 'Security'. A blue box highlights the 'Security' icon, which is connected by a blue arrow to the 'Manage roles' dialog window on the right. The 'Manage roles' dialog shows a list of roles under 'Roles' (Facebook) and a list of tables under 'Tables'. It also contains a 'Table filter DAX expression' field with the formula '[Social Network] = "Facebook"'. A callout box with a green checkmark and the text 'HEY THIS IS IMPORTANT!' is overlaid on the bottom-left of the screenshot. The text inside the callout box states: 'DAX expressions used to define roles must use expressions that filter rows and cannot reference a column, table, or measure alone'.

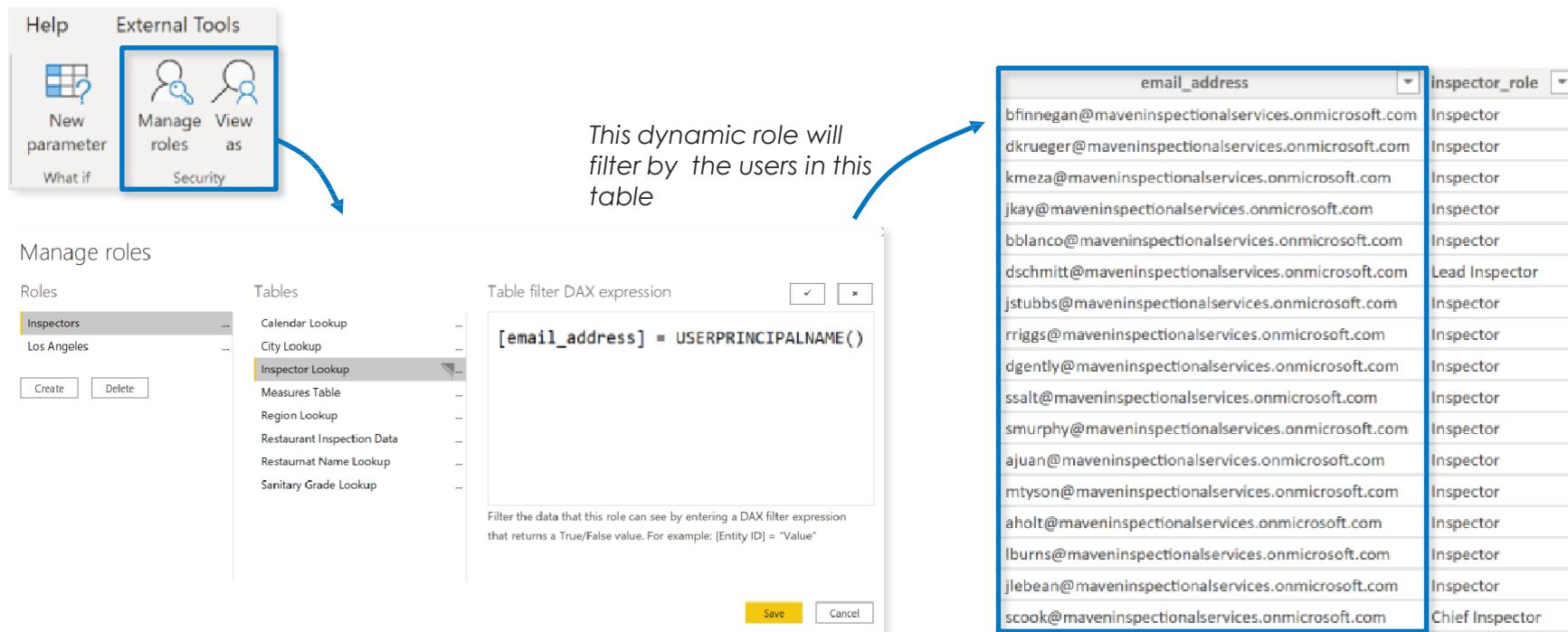
As a best practice, use the **View as** option to confirm that the security role properly limits the data prior to publishing to Power BI Service



The screenshot shows the Power BI desktop ribbon with the 'Modeling' tab selected. In the 'External Tools' section, the 'View as' button is highlighted with a blue box and a callout arrow pointing to a modal window titled 'View as roles'. The modal window contains three checkboxes: 'None', 'Other user', and 'Facebook', with 'Facebook' checked. A blue arrow points from the 'Facebook' checkbox to a status bar at the bottom of the screen which says 'Now viewing as: Facebook'. Below the modal, a data visualization card displays metrics such as 'Latest Date', 'AVG New User/Date' (157), 'AVG User/Date' (197), 'Total User (K)' (45481), 'Total New (K)' (36217), and 'SD User/Date' (86). The date filter on the right shows '8/3/2022' and '3/21/2023'.

Dynamic roles allow you to define filtered views for a specific list of users with the DAX function **USERPRINCIPALNAME**

- This DAX function requires adding an additional table into your data model
- Dynamic roles must first be configured in Power BI Desktop and then applied in Power BI Service



The screenshot shows the "Manage roles" screen in Power BI Desktop. A dynamic role named "Inspectors" is selected. The "Tables" section lists several lookups: Calendar Lookup, City Lookup, Inspector Lookup (which is highlighted), Measures Table, Region Lookup, Restaurant Inspection Data, Restaurant Name Lookup, and Sanitary Grade Lookup. In the "Table filter DAX expression" field, the formula `[email_address] = USERPRINCIPALNAME()` is entered. A callout points from the text "This dynamic role will filter by the users in this table" to the "Inspector Lookup" table. To the right, a separate screenshot of the "Inspector Lookup" table is shown, displaying email addresses and their corresponding roles.

email_address	inspector_role
bfinnegan@maveninspectionalservices.onmicrosoft.com	Inspector
dkrueger@maveninspectionalservices.onmicrosoft.com	Inspector
kmeza@maveninspectionalservices.onmicrosoft.com	Inspector
jkay@maveninspectionalservices.onmicrosoft.com	Inspector
bblanco@maveninspectionalservices.onmicrosoft.com	Inspector
dschmitt@maveninspectionalservices.onmicrosoft.com	Lead Inspector
jstubbs@maveninspectionalservices.onmicrosoft.com	Inspector
rriggs@maveninspectionalservices.onmicrosoft.com	Inspector
dgently@maveninspectionalservices.onmicrosoft.com	Inspector
ssalt@maveninspectionalservices.onmicrosoft.com	Inspector
smurphy@maveninspectionalservices.onmicrosoft.com	Inspector
ajuan@maveninspectionalservices.onmicrosoft.com	Inspector
mtyson@maveninspectionalservices.onmicrosoft.com	Inspector
ahoit@maveninspectionalservices.onmicrosoft.com	Inspector
lburns@maveninspectionalservices.onmicrosoft.com	Inspector
jlebean@maveninspectionalservices.onmicrosoft.com	Inspector
scook@maveninspectionalservices.onmicrosoft.com	Chief Inspector

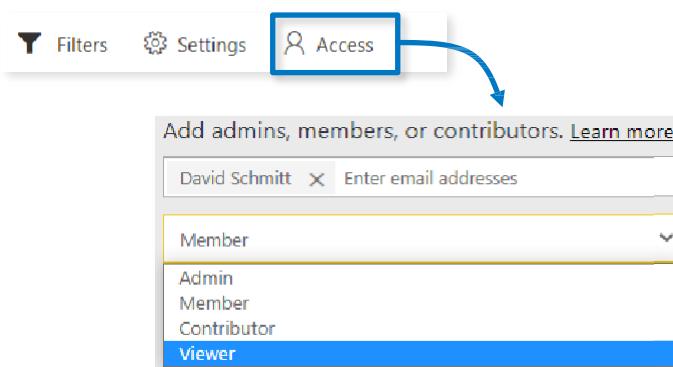
Sharing, Collaboration, RLS

Applying RLS in Power BI service



Once RLS rules have been defined in Power BI Desktop, they can be applied to users who you've shared reports with or have **Viewer** permissions in Power BI Service

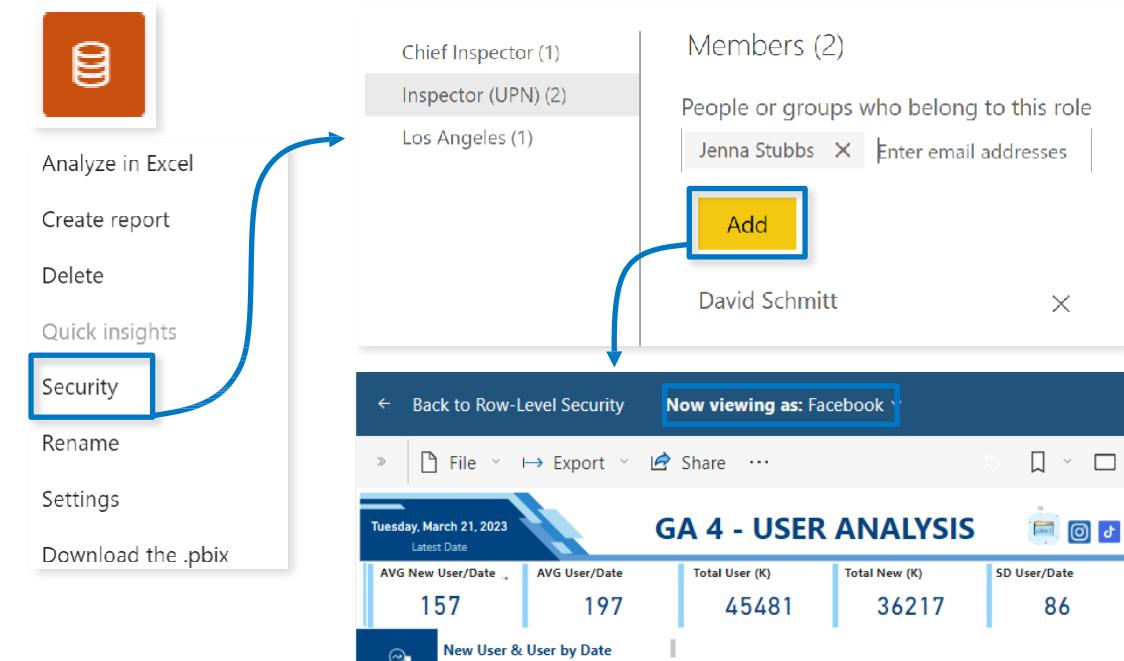
- 1 Confirm that users impacted by RLS are assigned to the **Viewer** role



HEY THIS IS IMPORTANT!

If a user is assigned as an Admin, Member, or Contributor, RLS will be overridden

- 2 Add people or groups to the RLS rule





On Desktop, RLS rules have been defined in Power BI Desktop => Service to management RLS



On Service, RLS works entirely on the service (define, management)



POWER BI SERVICE

PART 1: PBI Ecosystem (PBI Service)

PART 2: Connecting data

PART 3: Prep Data (On Pro & Premium)

PART 4: Data Modeling

PART 5: Report and Dashboard

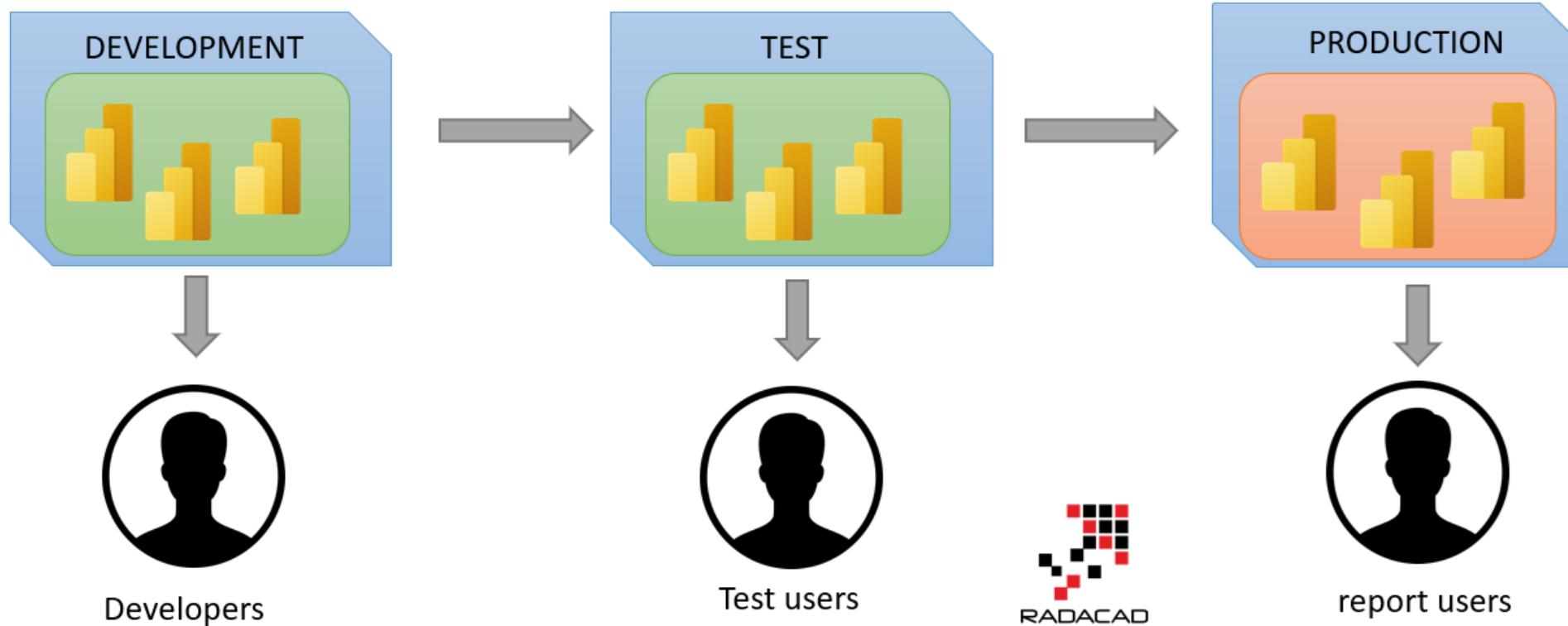
PART 6: Refresh, Scoreboard vs. Metrics

PART 7: Sharing, Collaboration, RLS

PART 8: Deployment Pipelines



Separating environments



Deployment pipelines

Introduction



Deployment pipelines

- The deployment pipelines tool enables BI creators to manage the lifecycle of organizational content.
- Deployment pipelines enable creators to develop and test Power BI content in the Power BI service, before the content is consumed by users

The image shows a screenshot of the Power BI service interface on the left and a conceptual diagram on the right.

Screenshot of the Power BI Service:

- The sidebar menu includes Home, Favorites, Recent, Apps, Shared with me, Deployment pipelines (which is selected and highlighted with a red border), and Learn.
- The main area shows Workspaces and My workspace.
- At the bottom is a Get data section.

Conceptual Diagram:

A central graphic features a yellow circle containing a white gear, with various icons like a folder, pie chart, user profile, magnifying glass, and gears surrounding it. Below this is the heading "Create a deployment pipeline".

The process is divided into four numbered steps:

- Create a pipeline**: Start by creating the pipeline you'll use for managing and deploying the workspace content.
- Assign your workspace**: Select your workspace and assign it to a deployment stage (development, test, or production).
- Develop and test your content**: Manage, preview, and compare your workspace content until it's ready for releasing to users.
- Share with your users**: Deploy your content to production and share it with your organization.

A large yellow "Create a pipeline" button is located at the bottom center of the diagram.

Deployment pipelines

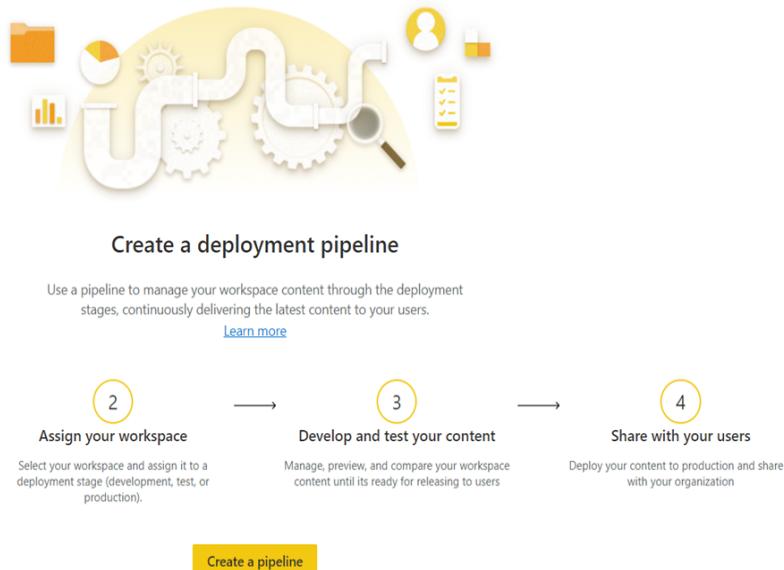
Introduction



Pipeline structure

- Development
- Test
- Production

A screenshot of the Power BI navigation menu. The menu items include Home, Favorites, Recent, Apps, Shared with me, Deployment pipelines (which is highlighted with a red border), Learn, Workspaces, and My workspace. At the bottom is a Get data section.



HEY THIS IS IMPORTANT!

Datasets that don't originate from a .pbix
PUSH datasets
Streaming dataflows
Reports based on unsupported datasets
Template app workspaces
Workbooks
Metrics

Deployment pipelines

Creating deployment pipelines



The screenshot shows the 'Create a deployment pipeline' wizard with three steps:

- Create a pipeline**: Start by creating the pipeline you'll use for managing and deploying the workspace content.
- Assign your workspace**: Select your workspace and assign it to a deployment stage (development, test, or production).
- Develop and test your content**: Manage, preview, and compare your workspace content until it's ready for releasing to users.

A large blue arrow points from the 'Create a pipeline' step to the 'Create a pipeline' button in the 'Documentation demo' interface.

The screenshot shows the 'Documentation demo' interface with the following sections:

- Documentation**: A navigation bar with 'Access', 'Settings', and other options.
- Development**: A card with 'Learn more' and a description: 'Design, review, and revise your content in a development workspace. When it's ready to test and preview, deploy the content to the test stage.'
- Test**: A card with 'Learn more' and a description: 'Test and verify your content in a preproduction workspace. When it's ready to distribute, deploy the content to the production stage.'
- Production**: A card with 'Learn more' and a description: 'Your content has been tested and is ready to distribute to your consumers as an app or by access to the production workspace.'
- Assign a workspace for this pipeline**: A section with a folder icon and a description: 'This is where you'll manage, update, and move your workspace content through the deployment stages, all the way until it reaches your users.' It includes a 'Learn more' link.

A large blue arrow points from the 'Create a pipeline' button in the 'Create a deployment pipeline' wizard to the 'Create a pipeline' button in the 'Documentation demo' interface.

HEY THIS IS IMPORTANT!

You have one of the following Premium licenses
You're an admin of a Premium [workspace](#)

Deployment pipelines

Creating deployment pipelines



The screenshot illustrates the process of creating a deployment pipeline in Microsoft Power BI.

Step 1: Select a workspace

A dropdown menu titled "Deploy to this stage or Assign a workspace" is open, showing a list of workspaces:

- Documentation [Test]
- Documentation demo
- Documentation demo [Production] (1)
- Documentation demo [Test] (1)

The "Documentation demo" item is highlighted with a red border.

Step 2: Development Stage

The "Development" stage is selected, showing its description: "Design, review, and revise your content in a development workspace. When it's ready to test and preview, deploy the content to the test stage."

Step 3: Test Stage

The "Test" stage is shown, with a "Deploy to test" button.

Step 4: Unassign workspace

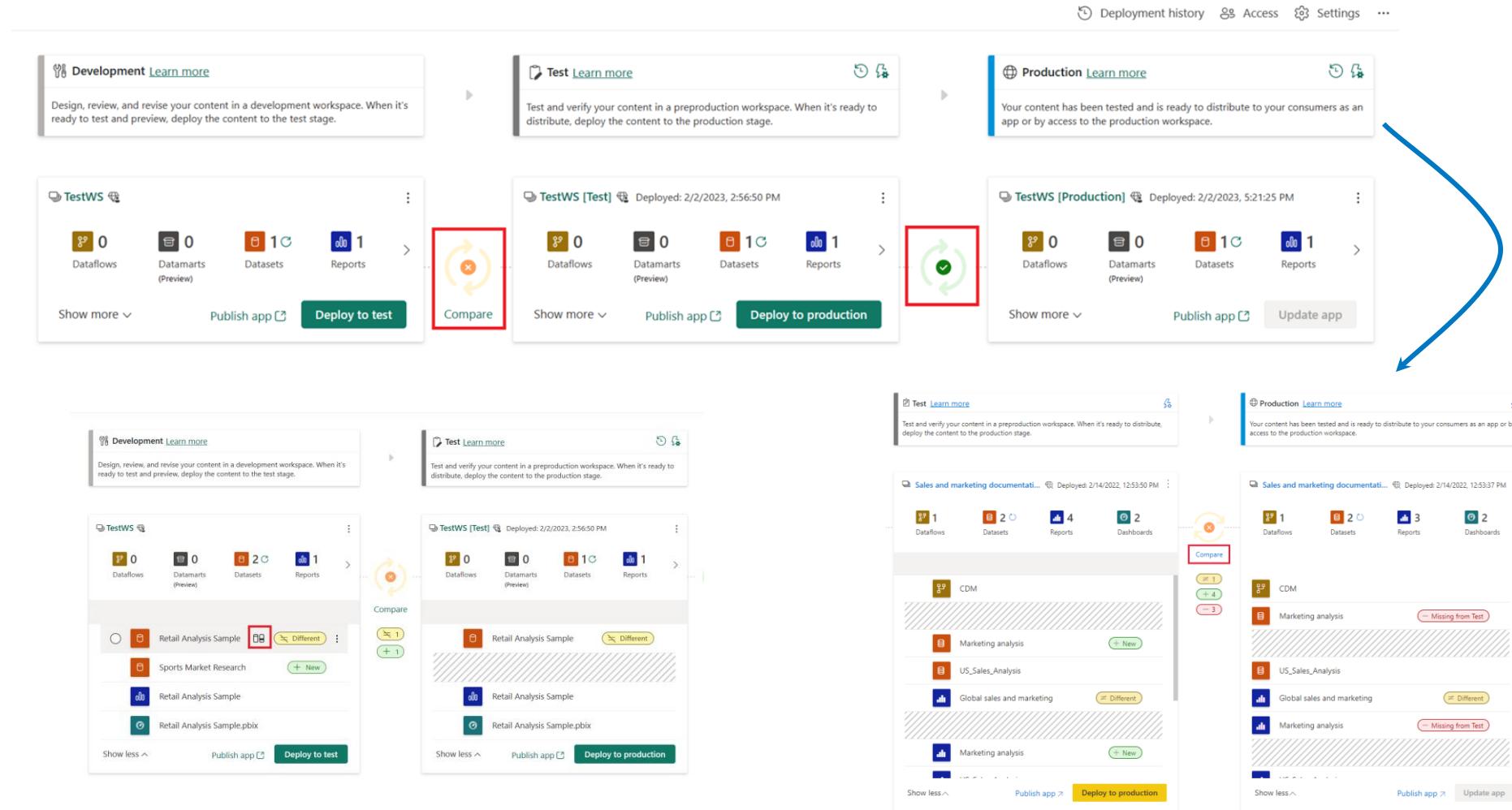
In the "Sales" workspace settings menu, the "Unassign workspace" option is highlighted with a red border.

Step 5: Confirmation dialog

A confirmation dialog box titled "Unassign workspace?" contains the message: "Unassigning this workspace from the pipeline will delete all its deployment settings. Reassigning this workspace to this pipeline stage, will only be possible if the stage is empty." It features "Unassign" and "Cancel" buttons, both highlighted with red borders.

Deployment pipelines

Creating deployment pipelines



Deployment pipelines

Deployment



Documentation demo

The screenshot illustrates the deployment pipeline across four stages:

- Development:** Shows 1 Dataflows, 2 Datasets, 2 Reports, and 2 Dashboards. Includes a "Deploy to test" button.
- Test:** Shows 1 Dataflows, 2 Datasets, 2 Reports, and 2 Dashboards. Includes a "Deploy to production" button.
- Production:** Shows 1 Dataflows, 2 Datasets, 2 Reports, and 2 Dashboards. Includes a "Publish app" and "Update app" button.
- Deployment:** Shows 1 Dataflows, 2 Datasets, 2 Reports, and 2 Dashboards. Includes a "Deploy to test" button.

Arrows indicate the flow from Development to Test, and from Test to Production. A "Deploy to test" button is highlighted in red in both the Development and Deployment stages, and a "Deploy to production" button is highlighted in red in the Test stage.

Documentation showcase

The screenshot illustrates the deployment pipeline across four stages:

- Development:** Shows 1 Dataflows, 2 Datasets, 2 Reports, and 2 Dashboards. Includes a "Deploy to this stage or Assign a workspace" section with a "Select" dropdown and a "Why can't I see all my workspaces?" link.
- Test:** Shows 1 Dataflows, 2 Datasets, 2 Reports, and 2 Dashboards. Includes a "Deploy to this stage or Assign a workspace" section with a "Select" dropdown and a "Why can't I see all my workspaces?" link.
- Production:** Shows 1 Dataflows, 2 Datasets, 2 Reports, and 2 Dashboards. Includes a "Publish app" and "Update app" button.
- Deployment:** Shows 1 Dataflows, 2 Datasets, 2 Reports, and 2 Dashboards. Includes a "Deploy to previous stage" button highlighted in red, and options for "Unassign workspace", "Update app", "Workspace access", and "Workspace settings".

A "Deploy to previous stage" button is highlighted in red in the Deployment stage.

Deployment pipelines

Deployment



Deploy from Development to Test

You are about to deploy from Development to Test. The artifacts that are going to be deployed are:

New (19)

- FamilyBM2M
- Historical sales
- MyFoods income
- Sales analysis drilldown
- Sentiment analysis

Add a note ^

Leave a note here.

Deploy Cancel

Deployment history

All Development Test Production

All

Deployed to	Date and time	Deployed by	Items	Note	ID	Status
Test	07/31/22, 10:23 AM	RP Rene Pellet...	(-6) + 3 = 64	?	i	✓
Test	07/06/22, 4:58 PM	RP Rene Pellet...	+ 74	?	i	✓
Test	06/06/22, 10:14 AM	RP Rene Pellet...	+ 1	?	i	✓
Test	06/02/22, 4:41 PM	RP Rene Pellet...	= 1	?	i	✓
Test	06/02/22, 4:32 PM	RP Rene Pellet...	Failed	?	i	✗

Power BI Deployment pipelines

Worldwide sales 6/2

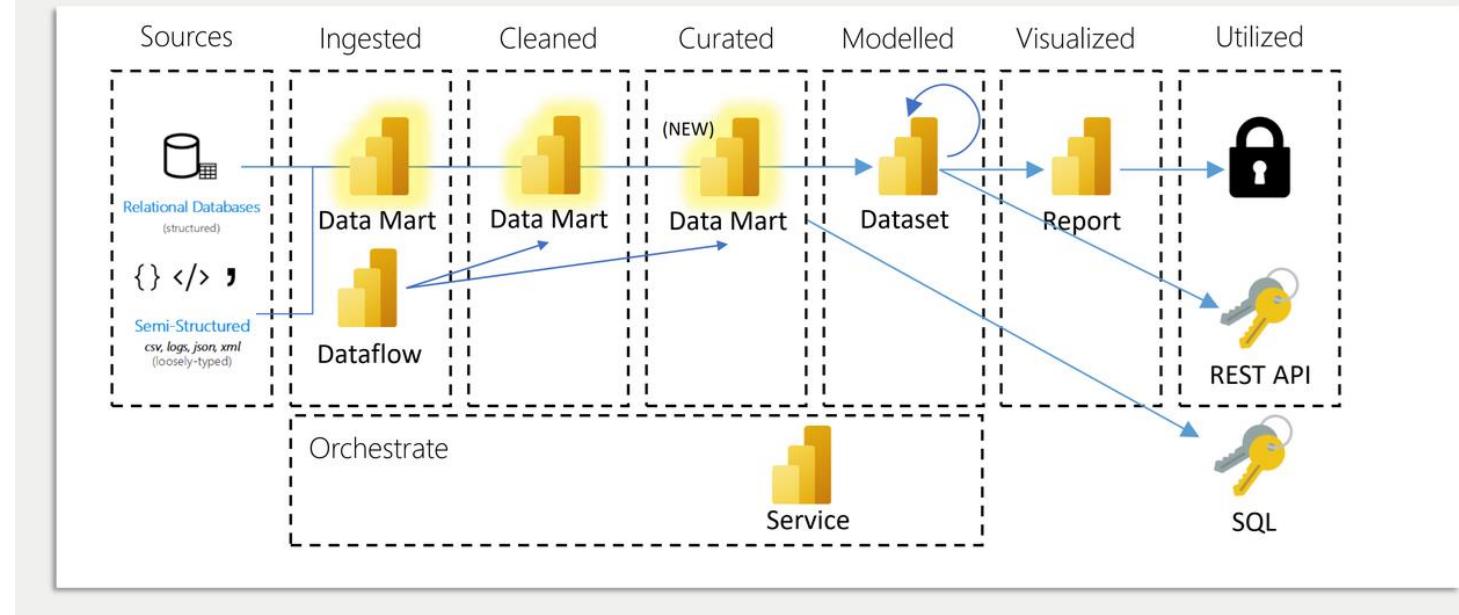
Deployment history Access Settings ...

Full Automation Dashboard Cycle

End - to - end analytics in Power BI



End-to-end analytics in Power BI





THANK YOU

