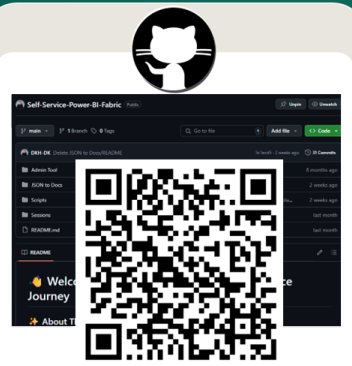
fabric FEBRUARY

A Power BI Documentation System

— Not Just an Afterthought

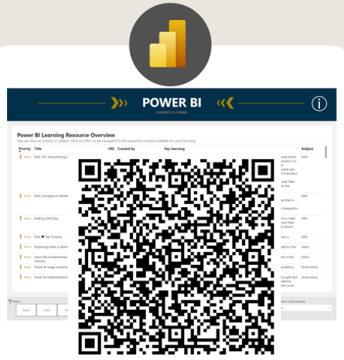
David Kofod Hanna



Open GitHub

David Kofod Hanna
Senior Advisor @ twoday Data & AI

Connect on LinkedIn



Open Free Learning Resource Power BI Report

Thank you to our Fabric February Friends!

bouvet

twoday

KOKA

sopra steria

Evidi

Crayon CONSULTING

Profisee Master Data Management

Tabular Editor

ANALYTICS masterminds

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Microsoft

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EUROPEAN MICROSOFT FABRIC Community Conference

profitbase PART OF HYPERGENE

Capgemini

David Kofod Hanna

Senior Advisor, Data Storytelling @ Twoday
+200 courses as Academy Trainer and 10 years as consultant
Microsoft Data Platform MVP, Certified Trainer in Microsoft and Tabular Editor

Passionate about guiding self-service Power BI developers for more enterprise manageable concepts in a consumable and practical way

Born on beautiful “Sunshine island”: **Bornholm**
Lives in Denmark, Silkeborg with wife and 3 kids
Love football, FC Barcelona and running half-marathons

Microsoft® Most Valuable Professional

Microsoft MCT Certified Trainer

#FabricFebruary

Who loves documentation?

✋

Who writes documentation?

✋

Who updates documentation?

✋

Who reads documentation?

✋

Who can find documentation?

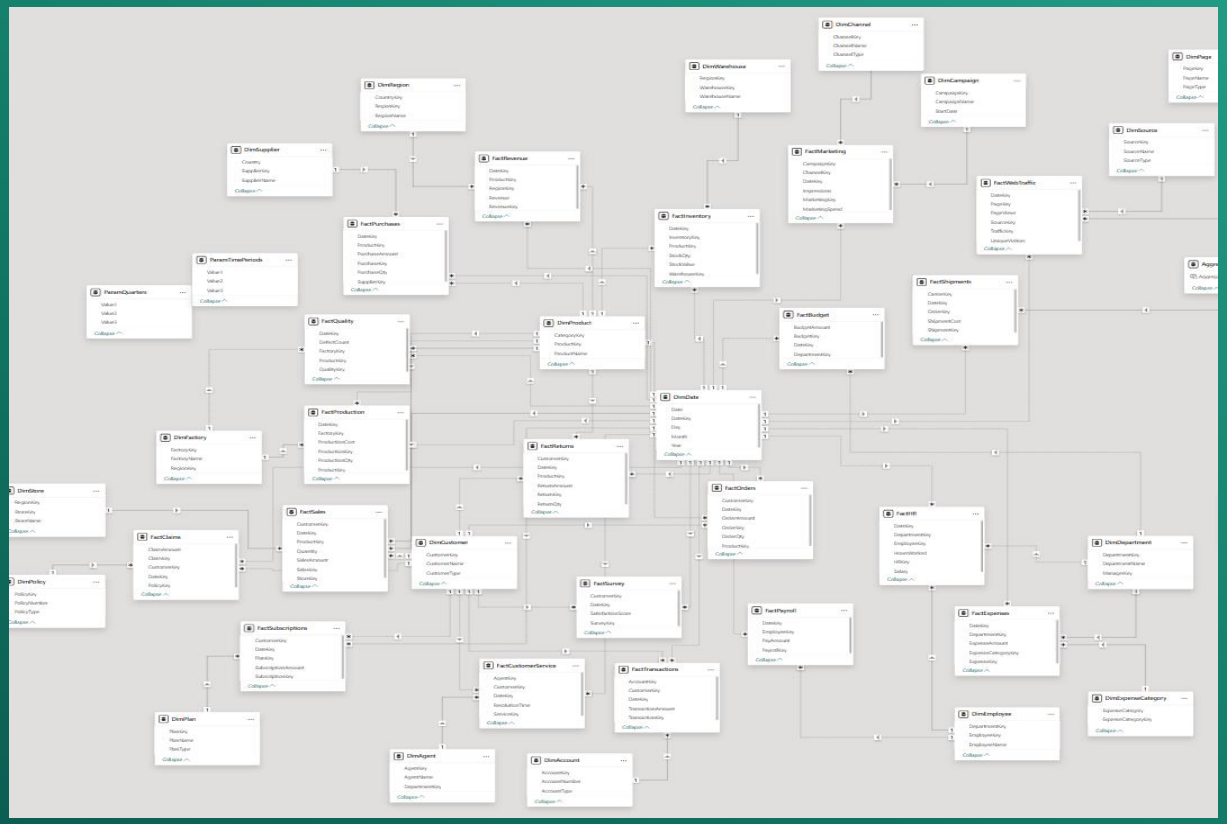
✋

Who can understand documentation?

✋

Who think AI and Agents will do this for you?

✋

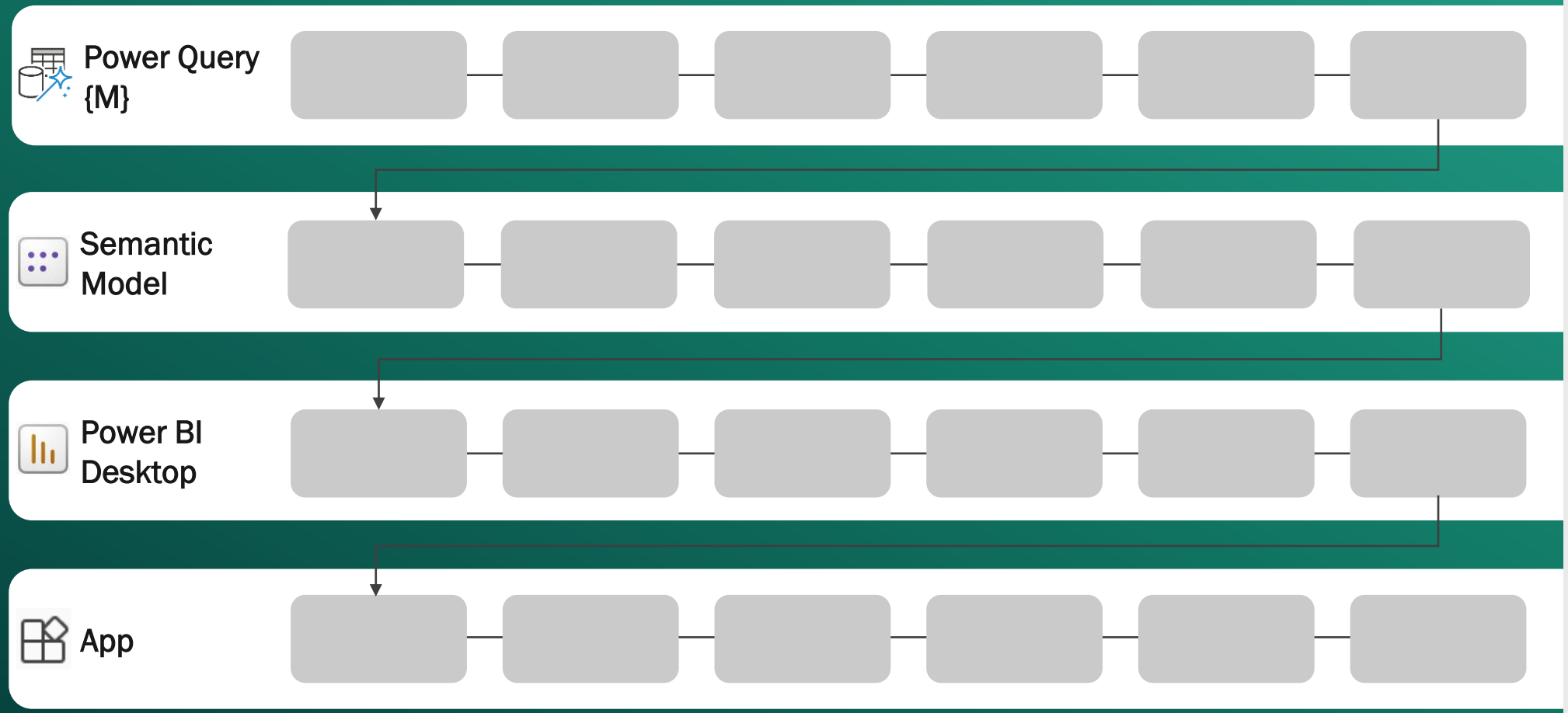


#FabricFebruary

“You do not rise to the level of your goals, you fall to the level of your systems.”

– James Clear, Atomic Habits

Power BI Documentation System



Purpose for docs:
Clear, Concise, Complete, Consistent, Correct, Consumable

Documentation and transparency from model to app

From report consumers to report developers to semantic model developers and data ingest

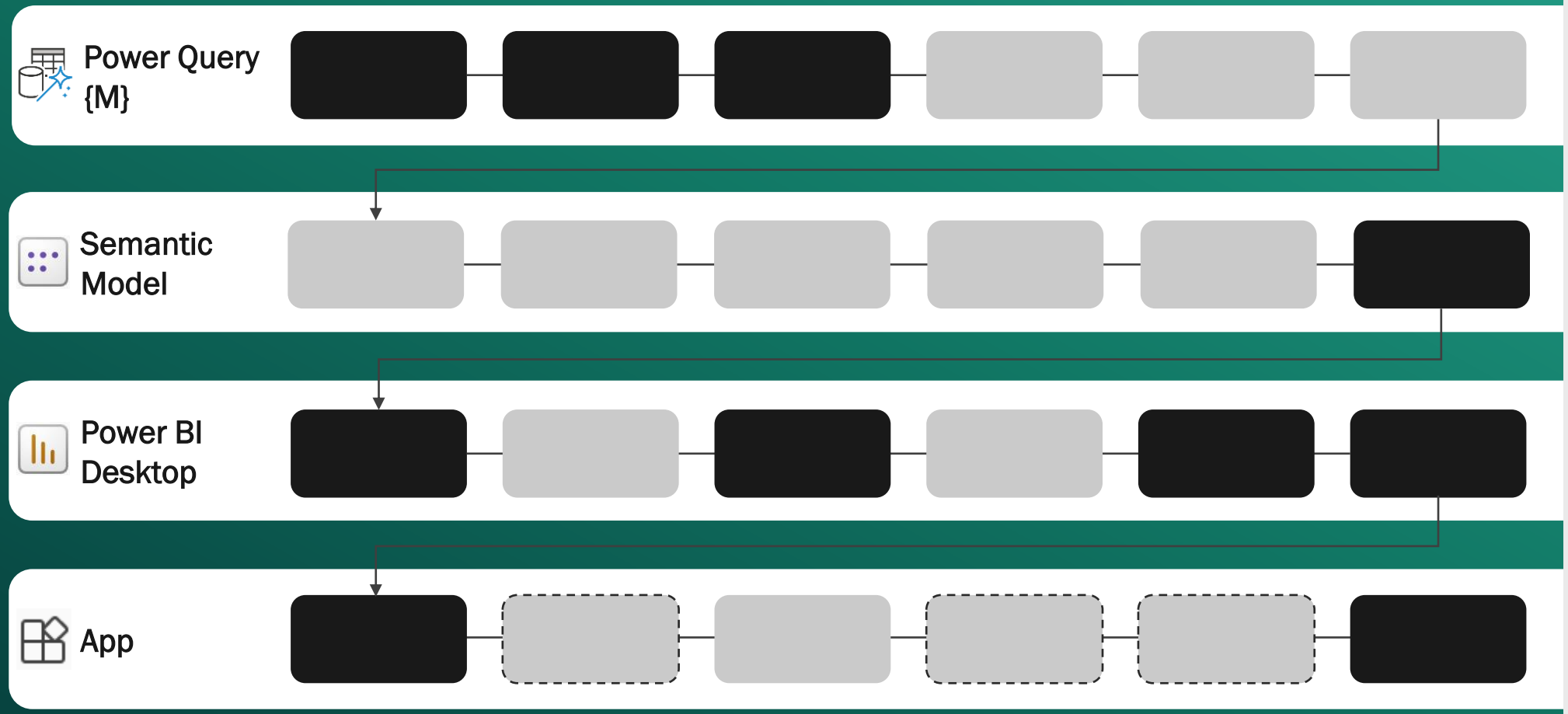
Best Practice Analyzer Rules to highlight violations and severity of best practices

Tabular Editor 2/3 for Semantic Model and DAX scripts

Semantic Link Labs in Fabric Notebooks for automation like never before

Power BI Documentation System

Automated or Script | Manual | Requires Fabric SKU



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Power BI Documentation System

Automated or Script | Manual | Requires Fabric SKU

Power Query {M}

- Query Folders (Manual)
- Applied Steps (Rename + Properties) (Manual)
- Table Properties (Manual)
- Parameters for easy switch (Automated or Script)
- Last Refresh & Measure Table & Table.Profile (Automated or Script)
- Powerqueryformatter.com (Automated or Script)

Semantic Model

- Format DAX & Measure Descriptions (Automated or Script)
- Best Practice Analyzer (Automated or Script)
- INFO.VIEW Model Docs (Automated or Script)
- Display Folders for Measures & Columns (Automated or Script)
- Table Groups (Automated or Script)
- Semantic Model Docs (Manual)

Power BI Desktop

- Model Layout View per Fact (Manual)
- DAX Query View + VertiPaq Analyzer (Automated or Script)
- Unpin Ineffective Default Visuals (Manual)
- Report Theme JSON Docs (Automated or Script)
- Report Visual elements in Selection Pane (Manual)
- Report Docs (Manual)

App

- Video and PDF in an App (Manual)
- Notebooks in an app (Requires Fabric SKU)
- OneLake Catalog (Automated or Script)
- All into a Lakehouse (Requires Fabric SKU)
- External Tools & Copilot (Requires Fabric SKU)
- End-User Docs (Manual)

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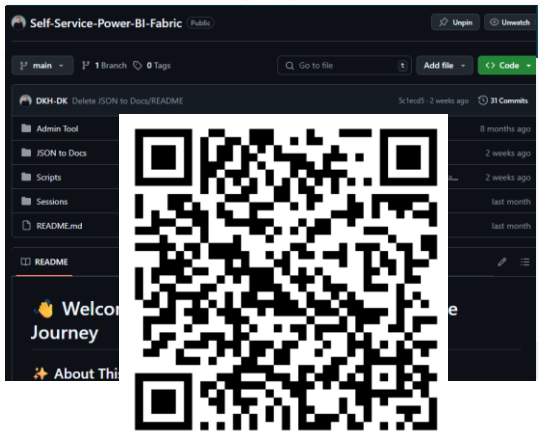
– Not Just an Afterthought

Released on **GitHub** and LinkedIn article

#DocumentationCanBeFun

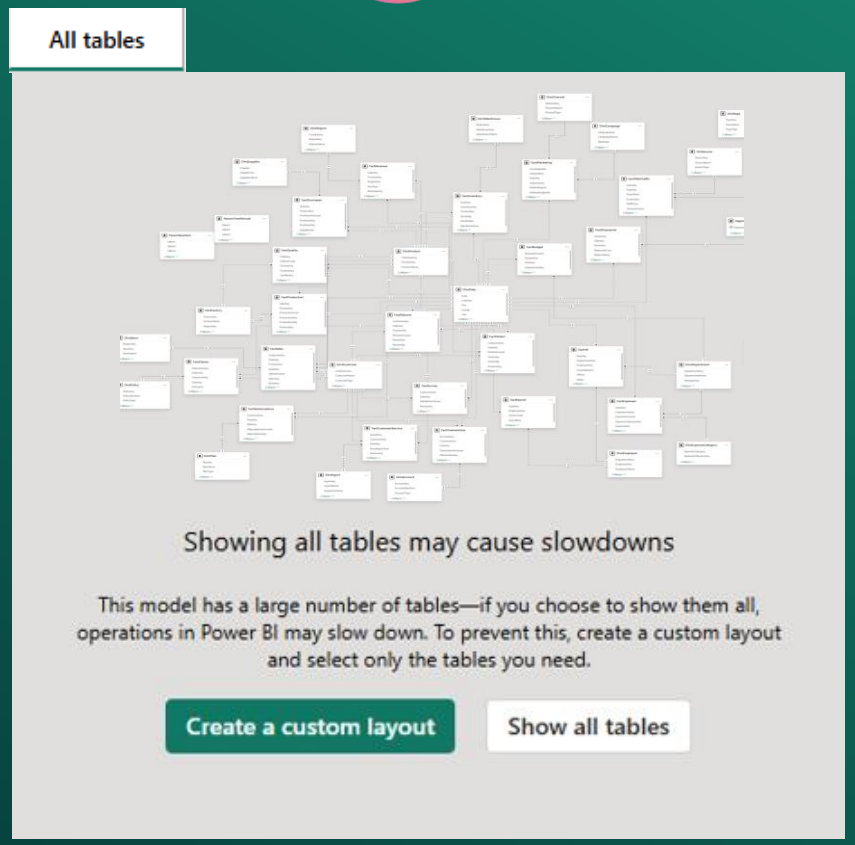
1. Create M Parameter	C# Script Source File
2. Create Global Measure Table	C# Script Source File
3. Create Last Refresh	C# Script Source File
4. Format Power Query (M)	C# Script Source File
5. Format DAX Measures	C# Script Source File
6. Measure DAX Expression as Description	C# Script Source File
7. Model Documentation DAX Script	TE3DAXS File
7. Model Documentation DAX	Text Document
8. Display Folders for Measures & Columns	C# Script Source File
9. Create Table Groups TE3	C# Script Source File
9. Table Groups in Power BI Desktop with INFO.VIEW DAX	File
9. Table Groups in Power BI Desktop with INFO.VIEW DAX Script	TE3DAXS File
10. Best Practice Analyzer Rules incl. John Kerski PQ Doc Rules	JSON Source File
11. Measure Dependency	DAX Query File
11. Model Issues	DAX Query File
11. Model Summary	DAX Query File
11. VertiPaq Column	DAX Query File
11. VertiPaq Memory Size	DAX Query File
11. VertiPaq Partition	DAX Query File
11. VertiPaq Relationship	DAX Query File
11. VertiPaq Table	DAX Query File
12. DKH Self-Service Report Theme - Raw Template	JSON Source File
12. JSON to Power BI Docs - Raw Template	Microsoft.MicrosoftPowerBIDesktop
13. Report Analysis Notebook - Michael Kovalsky	Jupyter Source File
14. Measure Maze Dependency Sandeep Pawar	Jupyter Source File
15. Design Document - Sample Fragment 01 - General and Scope - V0.1	Microsoft Word Document
15. Design Document - Sample Fragment 02 - Workflow Issues and Business Rules - V0.2	Microsoft Word Document
15. Design Document - Sample Fragment 03 - Data - V0.3	Microsoft Word Document
15. Design Document - Sample Fragment 04 - Reports - V0.4	Microsoft Word Document
MsBIP - Power BI Documentation System - David Kofod Hanna - May 2025	Microsoft PowerPoint Presentation

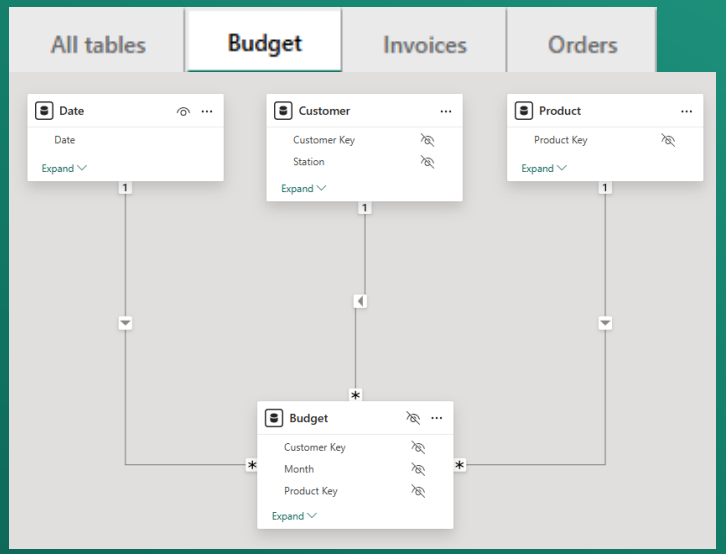


Open GitHub

#FabricFebruary

One Model View Per Fact + Disconnected tables

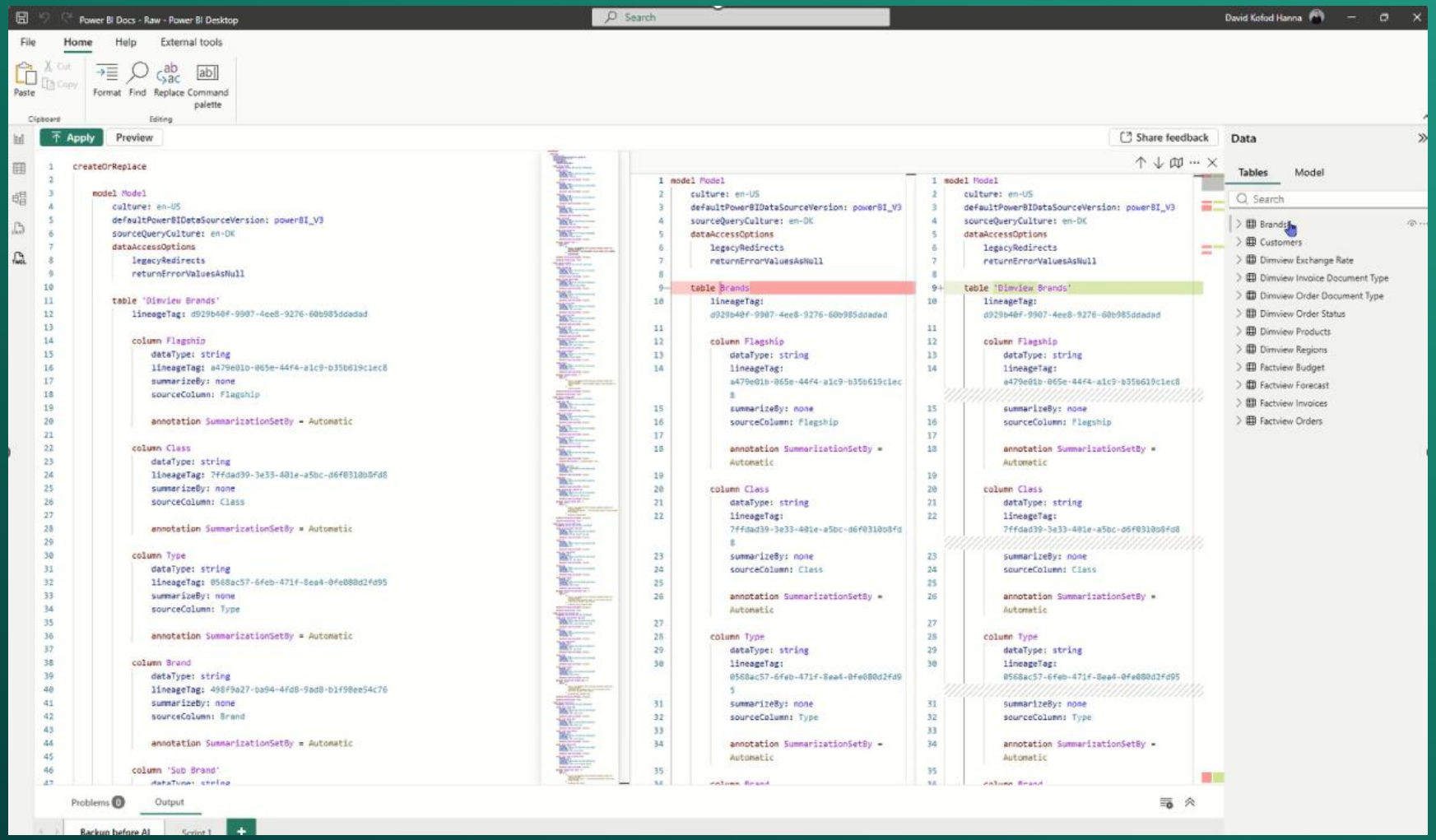




Disconnected Tables

- Measure groups
- Calculation groups
- Field parameters
- Numeric parameter
- Model documentation
- RLS

TMDL View backup – just in case ☺



Organize your semantic model with C# Scripts in Tabular Editor

- Factview Invoices
  - Billing Date
  - Billing Document Line Item Number
  - Billing Document Number
  - Billing Document Type Code
  - Customer Key
  - Delivery Cost
  - DWCreatedDate
  - Freight
  - Late Delivery Penalties
  - Local Currency
  - Net Invoice COGS
  - Net Invoice Cost
  - Net Invoice Quantity
  - Net Invoice Value
  - OTD Indicator
  - Overdue Payment Penalties
  - Product Key
  - Ship Date
  - Taxes & Commercial Fees

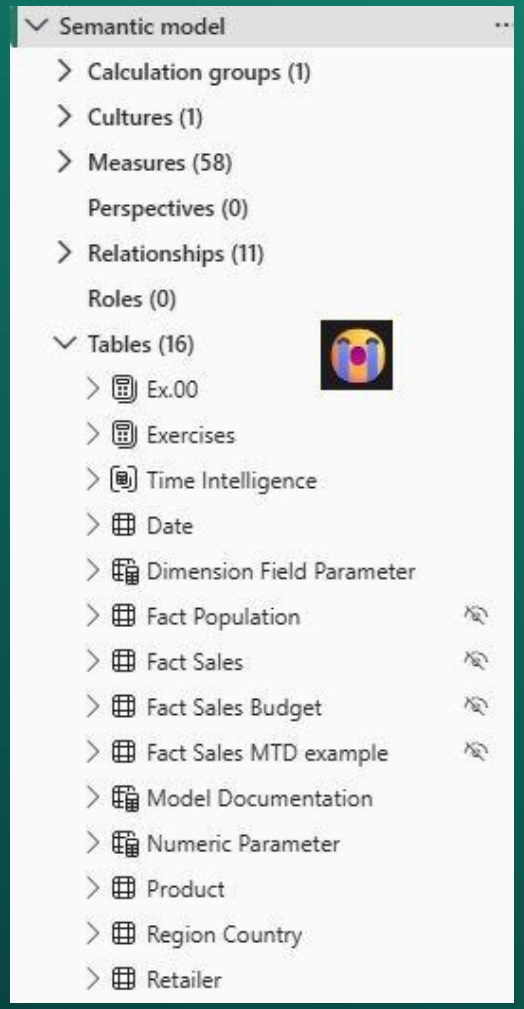
- Invoices
  - Attributes
  - Dates
  - Flags
  - Key
  - Numeric

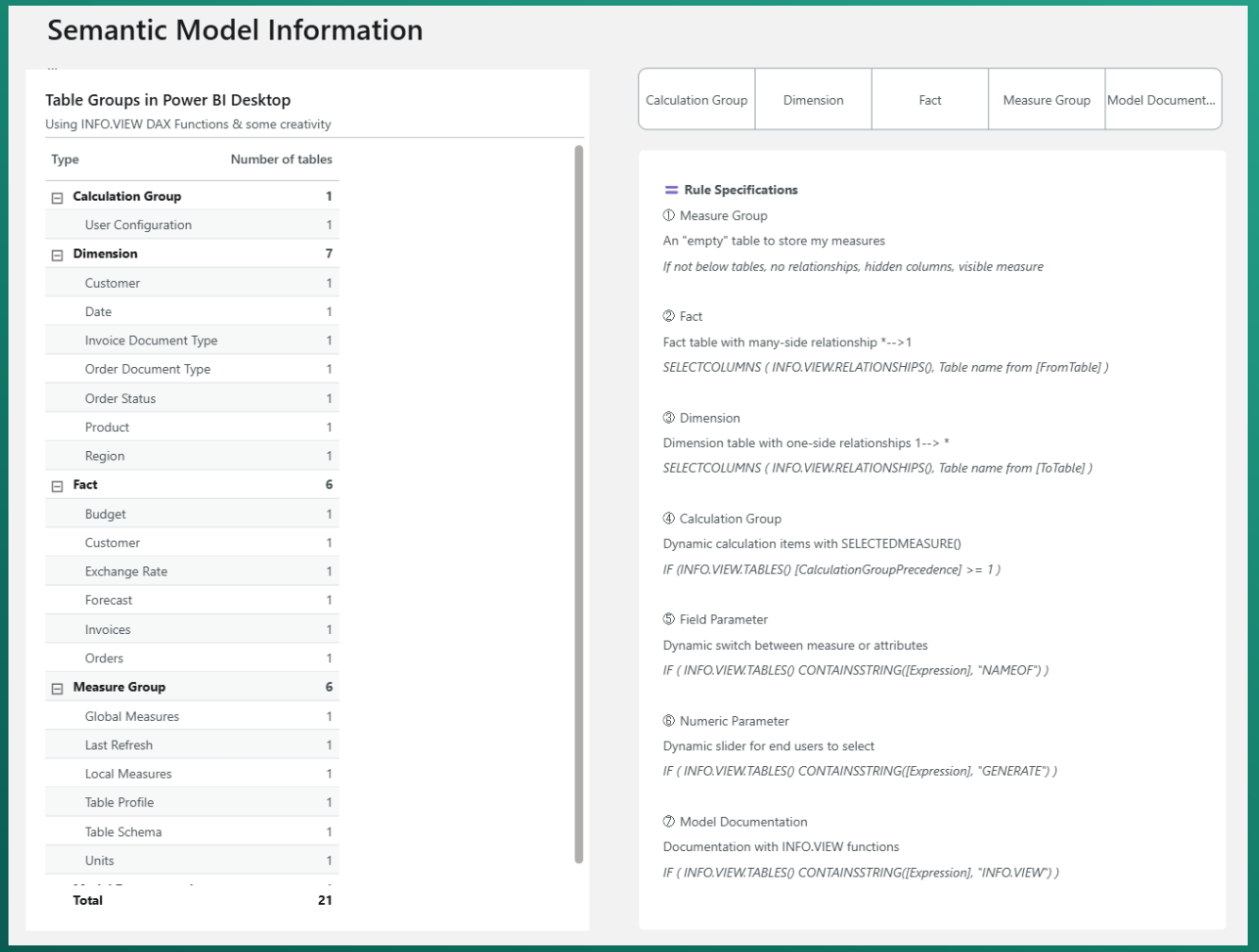
"There's a script for that"

```
//Go through each table in the model
foreach(var table in Model.Tables)
{
   if(table.Name != "Date"){
    //First look at columns
     foreach( var column in table.Columns)
        {
        var keySuffix = "Key";
        var columnDateType = column.DataType.ToString();
            //DWCreatedDate column should be hidden in a sepearte folder
            if( column.Name == "DWCreatedDate")
            {
                column.DisplayFolder = "Attributes\\Metadata";
                column.IsHidden = true;
            }
            //Numeric columns should not be aggregated and float (double) data type should not be used
            if(column.DataType == DataType.Double || column.DataType == DataType.Decimal ||  column.DataType == DataType.Int64)
            {
                column.DisplayFolder = "Numeric";
                column.SummarizeBy = AggregateFunction.None;
                if(column.DataType == DataType.Double)
                {
                    column.DataType = DataType.Decimal;
                }
            }
            //Boolean data types into their own folder
            if(column.DataType == DataType.Boolean)
            {
                column.DisplayFolder = "Flags";
            }
            if(column.DataType == DataType.String)
            {
                column.DisplayFolder = "Attributes";
            }
            //Keys go into their own display folder, should not be aggregrated and hidden.
            if(column.UsedInRelationships.Any())
            {
                column.DisplayFolder = "Key";
                column.SummarizeBy = AggregateFunction.None;
                column.IsHidden = true;
            }
            //Date keys get their own folder and other dates go in attributes
           if( columnDateType == "DateTime" && column.Name != "DWCreatedDate")
            {
                if(column.UsedInRelationships.Any())
                {
                    column.DisplayFolder = "Key";
                    column.IsHidden = true;
                }
                else{
                    column.DisplayFolder = "Dates";
```

#FabricFebruary https://docs.tabulareditor.com/features/CSharpScripts/Advanced/script-databricks-semantic-model-set-up.html

Table Group in Power BI Desktop with INFO.VIEW





Semantic Model Information

Table Groups in Power BI Desktop

Using INFO.VIEW DAX Functions & some creativity

Type	Number of tables
Calculation Group	**1**
User Configuration	1
Dimension	**7**
Customer	1
Date	1
Invoice Document Type	1
Order Document Type	1
Order Status	1
Product	1
Region	1
Fact	**6**
Budget	1
Customer	1
Exchange Rate	1
Forecast	1
Invoices	1
Orders	1
Measure Group	**6**
Global Measures	1
Last Refresh	1
Local Measures	1
Table Profile	1
Table Schema	1
Units	1
Total	**21**

Calculation Group | Dimension | Fact | Measure Group | Model Document...

Rule Specifications

① Measure Group

An "empty" table to store my measures

If not below tables, no relationships, hidden columns, visible measure

② Fact

Fact table with many-side relationship *-->1

SELECTCOLUMNS (INFO.VIEW.RELATIONSHIPS(), Table name from [FromTable])

③ Dimension

Dimension table with one-side relationships 1--> *

SELECTCOLUMNS (INFO.VIEW.RELATIONSHIPS(), Table name from [ToTable])

④ Calculation Group

Dynamic calculation items with SELECTEDMEASURE()

IF (INFO.VIEW.TABLES() [CalculationGroupPrecedence] >= 1)

⑤ Field Parameter

Dynamic switch between measure or attributes

IF (INFO.VIEW.TABLES() CONTAINSSTRING([Expression], "NAMEOF"))

⑥ Numeric Parameter

Dynamic slider for end users to select

IF (INFO.VIEW.TABLES() CONTAINSSTRING([Expression], "GENERATE"))

⑦ Model Documentation

Documentation with INFO.VIEW functions

IF (INFO.VIEW.TABLES() CONTAINSSTRING([Expression], "INFO.VIEW"))

David Kofod Hanna: https://www.linkedin.com/pulse/table-groups-power-bi-desktop-infoview-david-kofod-hanna-aotof/

#FabricFebruary

DAX Query View for testing & VertiPaq

DAX queries will be saved to your model. They won't be visible when published in the Power BI service. Learn more

Run | Update model with changes (0)

```
// Author - Hariharan Rajendran
// Name - Model Summary in DAX Query View
// Version - 1.0
// Contact - https://www.linkedin.com/in/imhariharanr/
//This query will provide details about your model like propery, value and comment to execute the DAX query to see the complete list
//Define the properties
EVALUATE
    VAR _tableCount = COUNTROWS(INFO.TABLES())
    VAR _columnCount = COUNTROWS(INFO.COLUMNS())
    VAR _CalcColumnCount = COUNTROWS(FILTER(
        INFO.COLUMNS(),
        [Type] = 2
    ))
    VAR _Measures = COUNTROWS(INFO.MEASURES())
    VAR _Relationships = COUNTROWS(INFO.RELATIONSHIPS())
    VAR _Composite = IF(
        COUNTROWS(SUMMARIZE(
            INFO.VIEW.TABLES(),
            [StorageMode]
        )) > 1,
        "Yes",
        "No"
    )
    VAR _daxTables = COUNTROWS(FILTER(
```

Model Summary

	[Property]	[Value]	[Comment]
1	Tables	21	EVALUATE INFO.TABLES()
2	Columns	197	EVALUATE INFO.COLUM...
3	--CalculatedColumns	0	EVALUATE FILTER(INFO....
4	--DirectColumns	197	EVALUATE FILTER(INFO....
5	Measures	17	EVALUATE INFO.MEASU...
6	Relationships	13	EVALUATE INFO.RELATI...
7	IsCompositeModel	No	EVALUATE INFO.VIEW.T...
8	DAXTables	2	EVALUATE FILTER(INFO....
9	IsPartitioned	No	EVALUATE FILTER(INFO....
10	Perspectives	0	EVALUATE FILTER(INFO....
11	Calculation Groups	2	EVALUATE FILTER(INFO....
12	Roles	0	EVALUATE FILTER(INFO....
13	PBIDesktopVersion	2.142.1277.0 (25.04)+014fde45...	EVALUATE FILTER(INFO....

Model Issues

	[Property]	[Value]	[Comment]	[Status]
1	Is Partition Required?	Yes	EVALUATE VAR _dt_parti...	Fail
2	Dedicated Date Table	No	EVALUATE FILTER(INFO....	Fail
3	Is there any Redundant Columns	Yes	EVALUATE FILTER(GROU...	Fail
4	Are descriptions added?	No	EVALUATE FILTER(INFO....	Fail
5	Calculated Columns		EVALUATE FILTER(INFO....	Pass
6	Local Date Tables (Auto Time Intelligence)	0	EVALUATE FILTER(INFO....	Pass
7	In Active Relationships	0	EVALUATE FILTER(INFO....	Pass
8	Bi-directional Relationships	0	EVALUATE FILTER(INFO....	Pass
9	Many to Many Relationships	0	EVALUATE FILTER(INFO....	Pass

Measure Dependency

	[MeasureName]	[Expression]	[SourceMeasure]	[SourceExpression]	[Type]	[ReferenceTable]	[ReferenceObject]
1	Net Invoice Value YTD	CALCULATE([Sum of Ne...	Sum of Net Invoice Value	SUM('Invoices'[Net Invo...	TABLE	Invoices	Invoices
2	Net Invoice Value YTD	CALCULATE([Sum of Ne...	Sum of Net Invoice Value	SUM('Invoices'[Net Invo...	COLUMN	Invoices	Net Invoice Value
3	Net Invoice Value MTD	CALCULATE([Sum of Ne...	Sum of Net Invoice Value	SUM('Invoices'[Net Invo...	TABLE	Invoices	Invoices
4	Net Invoice Value MTD	CALCULATE([Sum of Ne...	Sum of Net Invoice Value	SUM('Invoices'[Net Invo...	COLUMN	Invoices	Net Invoice Value
5	Net Invoice Value QTD	CALCULATE([Sum of Ne...	Sum of Net Invoice Value	SUM('Invoices'[Net Invo...	TABLE	Invoices	Invoices
6	Net Invoice Value QTD	CALCULATE([Sum of Ne...	Sum of Net Invoice Value	SUM('Invoices'[Net Invo...	COLUMN	Invoices	Net Invoice Value
7	Number of tables	COUNTROWS('Table Gr...			CALC_TABLE	Table Group DAX	Table Group DAX
8	Sum of Total Budget	SUM('Budget'[Total Bud...			TABLE	Budget	Budget
9	Sum of Total Budget	SUM('Budget'[Total Bud...			COLUMN	Budget	Total Budget
10	Sum of Net Order Quan...	SUM('Orders'[Net Order...			TABLE	Orders	Orders

VertiPaq Memory Size

	[Size in MB]
1	1017.25

Visible in .PBIP and for easy copy/paste

System.SemanticModel > DAXQueries >

.pbi	
DAXQueries	
.platform	
definition.pbism	
diagramLayout	

.pbi	File folder
Measure Dependency	DAX Query File
Model Issues	DAX Query File
Model Summary	DAX Query File
VertiPaq Columns	DAX Query File
VertiPaq Memory Size	DAX Query File
VertiPaq Partitions	DAX Query File
VertiPaq Relationships	DAX Query File
VertiPaq Table	DAX Query File

Credit to Hariharan Rajendran
https://www.linkedin.com/feed/update/urn:li:activity:7307061810375925760/
https://github.com/alexbadiu-insightsinmotion/PBI-Documentation/tree/main/DAX%20Query%20View

#FabricFebruary

Model Docs DAX INFO.VIEW

I ❤️ auto-updated documentation with INFO.VIEW DAX Functions

"There's a script for that"

Semantic Model Information

Clear all slicers

Model Documentation
by INFO.VIEW Functions

Filter by keyword | Column | Measure | Relationship | Table

Location	Name	Type	Expression	Description
	Finance Transactions	Table		The wonderful sample data by Microsoft "Financials" from 2013
Finance Transactions	Revenue YTD	Measure	CALCULATE([Revenue], DATESYTD('Date'[Date]))	If blank, remember to filter on a year with data
	Budget	Table		From Excel workbook Owner: David Hanna
	Calendar	Table		Calendar table
	'Budget'[Date] *[<-]1 'Calen...	Relationship	'Budget'[Date] *[<-]1 'Calendar'[Date]	
	'Budget'[Date] *[<-]1 'Date'...	Relationship	'Budget'[Date] *[<-]1 'Date'[Date]	
	'Calendar'[Date] *[<-]1 'Loc...	Relationship	'Calendar'[Date] *[<-]1 'LocalDateTable_27428003-7dd4-49...	
	'Calendar'[Year-Month] *[<-...	Relationship	'Calendar'[Year-Month] *[<-]1 'LocalDateTable_ea79abb1-2...	
	Country	Table		
	Date	Table		
	'Date'[Date] *[<-]1 'LocalDa...	Relationship	'Date'[Date] *[<-]1 'LocalDateTable_2d9661bf-0097-4ec8-b...	
	'Finance Transactions'[Coun...	Relationship	'Finance Transactions'[Country Key] *[<-]1 'Country'[Countr...	
	'Finance Transactions'[Date]...	Relationship	'Finance Transactions'[Date] *[<-]1 'Calendar'[Date]	
	'Finance Transactions'[Seg...	Relationship	'Finance Transactions'[Segment Key] *[<-]1 'Segment'[Seg...	
	Segment	Table		
Budget	Budget	Column		
Budget	Date	Column		
Budget	Product	Column		
Budget	Total Budget	Measure	SUM(Budget[Budget])	
Calendar	Date	Column		
Calendar	Day	Column		
Calendar	Day Name	Column		

Model Documentation

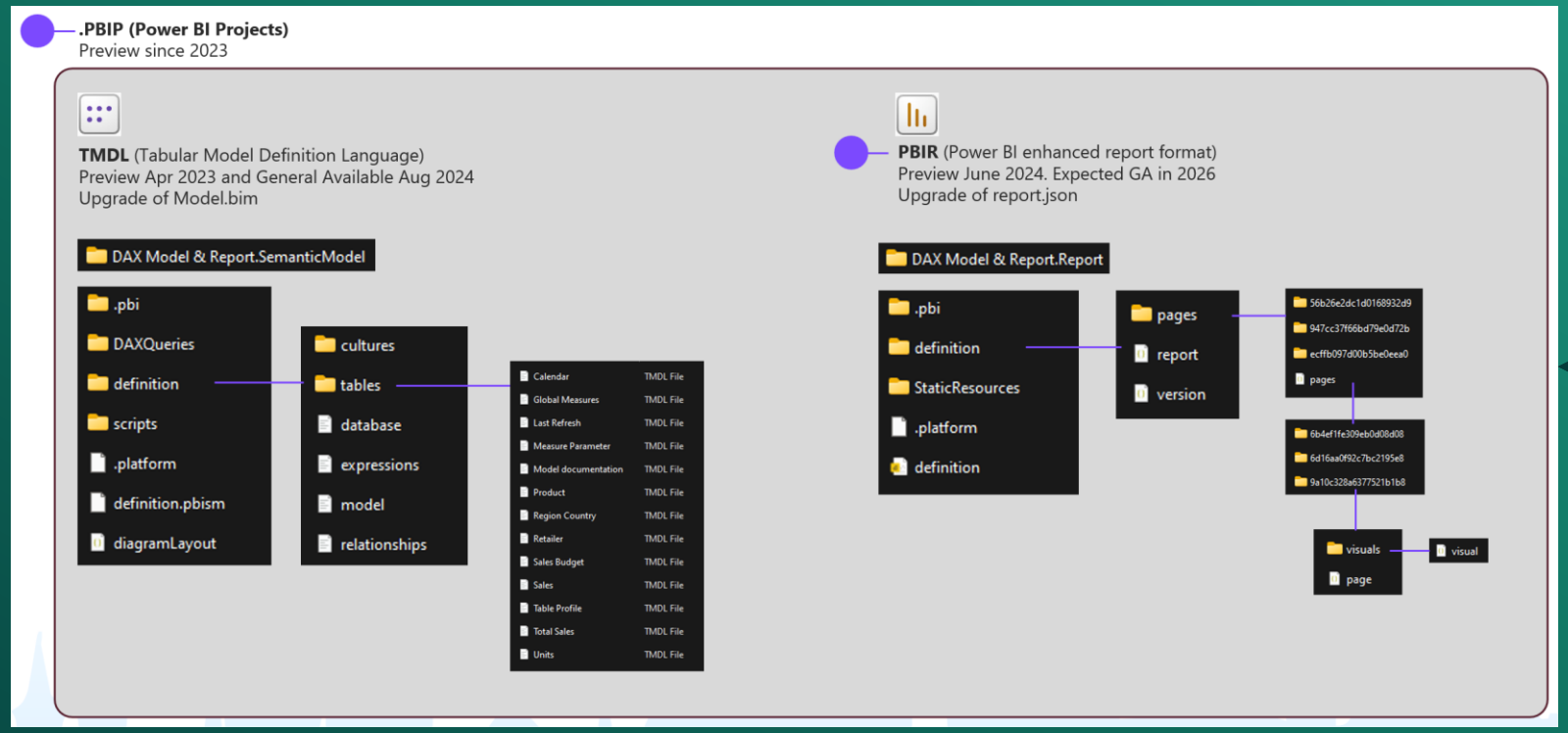
```
Model Documentation =
VAR _columns =
    SELECTCOLUMNS(
        FILTER(
            INFO.VIEW.COLUMNS(),
            [Table] <> "Model Documentation" && NOT([IsHidden])
        ),
        "Type", "Column",
        "Name", [Name],
        "Description", [Description],
        "Location", [Table],
        "Expression", [Expression]
    )
VAR _measures =
    SELECTCOLUMNS(
        FILTER(
            INFO.VIEW.MEASURES(),
            [Table] <> "Model Documentation" && NOT([IsHidden])
        ),
        "Type", "Measure",
        "Name", [Name],
        "Description", [Description],
        "Location", [Table],
        "Expression", [Expression]
    )
VAR _tables =
    SELECTCOLUMNS(
        FILTER(
            INFO.VIEW.TABLES(),
            [Name] <> "Model Documentation" && [Name] <> "Calculations" && NOT([IsHidden])
        ),
        "Type", "Table",
        "Name", [Name],
        "Description", [Description],
        "Location", BLANK(),
        "Expression", [Expression]
    )
VAR _relationships =
    SELECTCOLUMNS(
        INFO.VIEW.RELATIONSHIPS(),
        "Type", "Relationship",
        "Name", [Relationship],
        "Description", BLANK(),
        "Location", BLANK(),
        "Expression", [Relationship]
    )
RETURN
    UNION(_columns, _measures, _tables, _relationships)
```

David Kofod Hanna: https://www.linkedin.com/pulse/model-documentation-automation-dax-scripts-tabular-editor-hanna-7bhyf/

#FabricFebruary

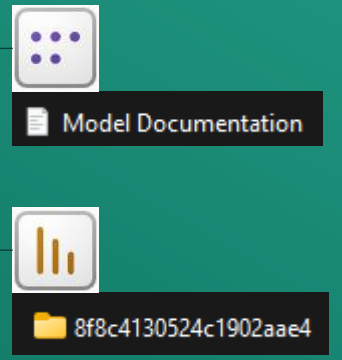
Copy-paste template of TMDL and report pages files

I ❤️ auto-updated documentation with INFO.VIEW DAX Functions & PBIP



Copy-Paste Operation 😍

It consist of two files.
One **TMDL file** with the calculated DAX table and **one report folder** with page and its visuals



Run DAX Query and save as delta table in Lakehouse 😲

You can loop over your semantic model and schedule to save results to track, monitor quality of reports, models or do data validation

DAX Query x Semantic Link Labs x DAX INFO Functions

Purpose of notebook is to collect, analyze and store semantic model INFO functions and DAX Queries in a Lakehouse and share with semantic model or report owners or *"crazy solution documenters"*

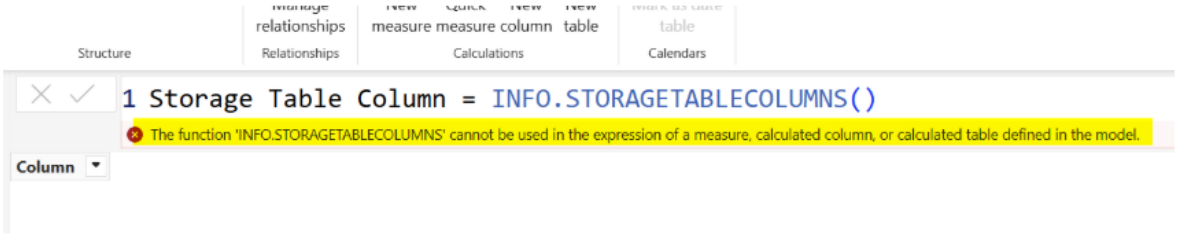
This can be run in a Python notebook

Credit to following

- Michael Kovalsky - Semantic Link Labs
- List of all DAX INFO functions
- Fourmoo on Python Notebook advantages vs spark notebooks
- Hariharan Rajendran's DAX Query on Models Issues and Model Summary
- Power BI Tips on Save to Delta table with Python
- Reza Rad's take on Power BI model analysis using DAX INFO functions
- David Kofod Hanna's GitHub on Power BI Documentation System

If you feel frustrated like me, not all DAX Info functions can be used like INFO.VIEW functions by adding a calculated DAX table.

Then we have been forced to used DAX Query View.



Save your frustration, because I found a way to store DAX Query results back to a lakehouse 🤪

Manual DAX Query

In [ ]:
```
# Define DAX Query to execute
dax_query = """
 EVALUATE
 INFO.TABLES()
 """
```

In [ ]:
```
# Run DAX Query against Semantic Model
df_result_manual = fabric.evaluate_dax(
    dataset=SemanticModelName,
    dax_string=dax_query,
    workspace=WorkspaceName
    )

# Display the result
display(df_result_manual)
```

In [ ]:
```
labs.save_as_delta_table(
    dataframe=df_result_manual,
    delta_table_name="daxquery",
    write_mode="overwrite",    # or "append" based on your requirement
    merge_schema=False,        # Set to True if you want to merge schema
    schema=None,               # Provide schema if needed
    lakehouse=LakehouseName,
    workspace=None
)
```

Automated DAX Query loop and save to delta table

In [ ]:
```
# Defining DF of all INFO DAX Functions and descriptions

dataDAX = [
    ("INFO.ALTERNATEOFDEFINITIONS()", ""),
    ("INFO.ANNOTATIONS()", "Returns a list of all annotations in t
    ("INFO.ATTRIBUTEHIERARCHIES()", "Represents the TMSCHEMA_ATTRI
    ("INFO.ATTRIBUTEHIERARCHYSTORAGES()", ""),
```

David Kofod Hanna: https://www.linkedin.com/posts/davidkofod_semanticlinklabs-notebook-activity-7348950238671306752-klPh

#FabricFebruary

Embed Notebooks for technical documentation

```
#Author and MVP: Sandeep Pawar
#https://fabric.guru/measure-maze-visualizing-measure-dependencies-using-semantic-link-network-analysis
```

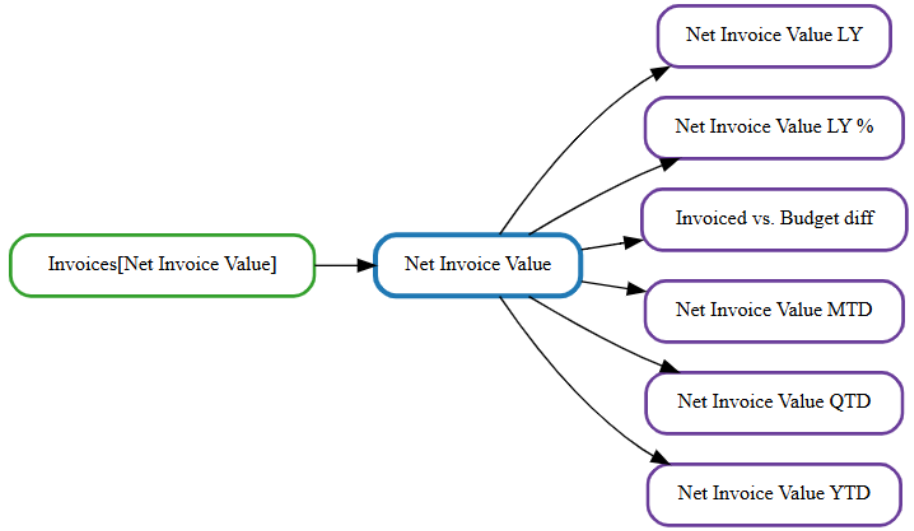
+ Code + Markdown

```
#Install Measure Maze in a Fabric Notebook
!pip install https://github.com/pawarbi/MeasureMaze/raw/main/measuremaze-0.0.1-py3-none-any.whl --q
```

✓

```
#Change the layout
all_objects.plot('Net Invoice Value', layout='horizontal')
```

[7] ✓ - Command executed in 375 ms by David Kofod Hanna on 1:02:35 PM, 8/12/25



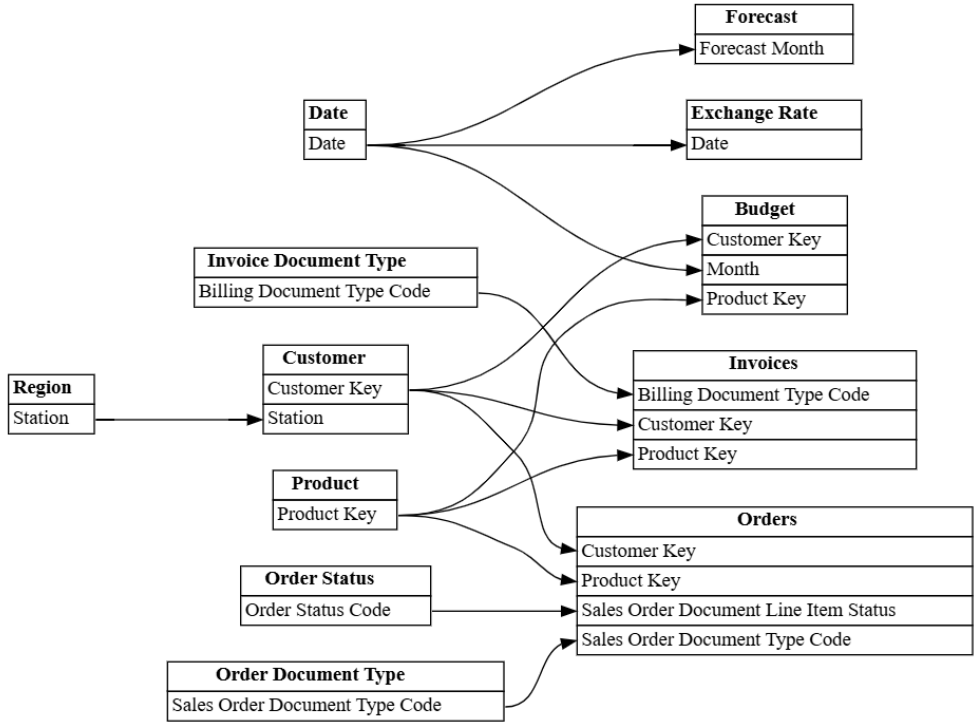

```
#Semantic Link can also be used to plot relationships between tables.

from sempy import fabric
from sempy.relationships import plot_relationship_metadata


relationships = fabric.list_relationships(workspace=ws, dataset=ds)
plot_relationship_metadata(relationships)

```

[10] ✓ - Command executed in 1 sec by David Kofod Hanna on 1:02:59 PM, 8/12/25



Sandeep Pawar: https://fabric.guru/measure-maze-visualizing-measure-dependencies-using-semantic-link-network-analysis

#FabricFebruary

PBIR Metadata from Notebook & Semantic Link Labs

Table view

	DataFrame	Description	Count
1	df_pages	Report pages (name, display name, hidden status)	19
2	df_bookmarks	All bookmarks in the report	16
3	df_visuals	All visuals (type, page, position)	356
4	df_paths	All definition file paths	473
5	df_report_filters	Report-level filters (apply to all pages)	2
6	df_page_filters	Page-level filters (apply to specific pages)	1
7	df_visual_filters	Visual-level filters (apply to specific visuals)	77
8	df_custom_visuals	Custom visuals used in report	0
9	df_report_level_...	Report-level measures (should migrate to model)	0
10	df_visual_calcula...	Visual calculations (new feature)	1
11	df_visual_interac...	Modified visual interactions	0
12	df_semantic_mo...	All semantic model objects used	408
13	df_visual_objects	Objects used in each visual	328

```python
# Collect all report data using list_ functions with error handling
print("Collecting report metadata...")

try:
    # Basic report structure
    print("  → Fetching pages...")
    df_pages = rpt.list_pages()

    print("  → Fetching bookmarks...")
    df_bookmarks = rpt.list_bookmarks()

    print("  → Fetching visuals...")
    df_visuals = rpt.list_visuals()

    print("  → Fetching definition paths...")
    df_paths = rpt.list_paths()

    # Filters
    print("  → Fetching report filters...")
    df_report_filters = rpt.list_report_filters(extended=False)

    print("  → Fetching page filters...")
    df_page_filters = rpt.list_page_filters(extended=False)

    print("  → Fetching visual filters...")
    df_visual_filters = rpt.list_visual_filters(extended=False)

    # Advanced features
    print("  → Fetching custom visuals...")
    df_custom_visuals = rpt.list_custom_visuals()

    print("  → Fetching report-level measures...")
    df_report_level_measures = rpt.list_report_level_measures()

    print("  → Fetching visual calculations...")
    df_visual_calculations = rpt.list_visual_calculations()

    print("  → Fetching visual interactions...")
    df_visual_interactions = rpt.list_visual_interactions()

    # Semantic model objects
    print("  → Fetching semantic model objects...")
    df_semantic_model_objects = rpt.list_semantic_model_objects(extended=False)

    print("  → Fetching visual objects...")
    df_visual_objects = rpt.list_visual_objects(extended=False)

    print("\n✓ Data collection complete!")

except Exception as e:
    print(f"\n✗ Error collecting data: {str(e)}")
    raise
```

✓ 2 min 17 sec - Command executed in 2 min 17 sec 608 ms by David Kofod Hanna on 7:15:49 PM, 12/04/25

```python
# Quick overview of all collected dataframes
print("="*70)
print("DATAFRAME COLLECTION OVERVIEW")
print("="*70)

dataframes_info = {
    'DataFrame': [
        'df_pages',
        'df_bookmarks',
        'df_visuals',
        'df_paths',
        'df_report_filters',
        'df_page_filters',
        'df_visual_filters',
        'df_custom_visuals',
        'df_report_level_measures',
        'df_visual_calculations',
        'df_visual_interactions',
        'df_semantic_model_objects',
        'df_visual_objects'
    ],
    'Description': [
        'Report pages (name, display name, hidden status)',
        'All bookmarks in the report',
        'All visuals (type, page, position)',
        'All definition file paths',
        'Report-level filters (apply to all pages)',
        'Page-level filters (apply to specific pages)',
        'Visual-level filters (apply to specific visuals)',
        'Custom visuals used in report',
        'Report-level measures (should migrate to model)',
        'Visual calculations (new feature)',
        'Modified visual interactions',
        'All semantic model objects used',
        'Objects used in each visual'
    ],
    'Count': [
        len(df_pages),
        len(df_bookmarks),
        len(df_visuals),
        len(df_paths),
        len(df_report_filters),
        len(df_page_filters),
        len(df_visual_filters),
        len(df_custom_visuals),
        len(df_report_level_measures),
        len(df_visual_calculations),
        len(df_visual_interactions),
        len(df_semantic_model_objects),
        len(df_visual_objects)
    ]
}

df_overview = pd.DataFrame(dataframes_info)
display(df_overview)

print("\n" + "="*70)
print("✓ All dataframes successfully collected!")
print("="*70)
```

✓ <1 sec - Command executed in 1 sec 6 ms by David Kofod Hanna on 7:49:06 PM, 12/04/25

Semantic Link Labs created by Michael Kovalsky

Semantic Link Labs PBI Overview

https://github.com/DKH-DK/Self-Service-Power-BI-Fabric/blob/main/Power%20BI%20Documentation%20System/Documentation%20Overview%20PBIR.ipynb

#FabricFebruary

Meta data on bookmarks

```
1  display(rpt.list_bookmarks())
```

Table | + New chart

Table view

	File Path	Bookmark Name	Bookmark Display Name	Page Name	Page Display Name	Visual Name	Visual Hidden	Suppress Data	Current Page Selected	Apply Visual Display State	Apply To All Visuals
1	definition/bo...	9e092750e45e565f00...	Reset slicers	ReportSectionfc...	Reset slicers	b78985681ee248...	false	false	true	true	true
2	definition/bo...	9e092750e45e565f00...	Reset slicers	ReportSectionfc...	Reset slicers	a8a6f3fd3923af5f...	false	false	true	true	true
3	definition/bo...	9e092750e45e565f00...	Reset slicers	ReportSectionfc...	Reset slicers	703b46a9a9b97a...	false	false	true	true	true
4	definition/bo...	9e092750e45e565f00...	Reset slicers	ReportSectionfc...	Reset slicers	9669cbddbb0c22...	false	false	true	true	true
5	definition/bo...	9e092750e45e565f00...	Reset slicers	ReportSectionfc...	Reset slicers	b795aead62949c...	false	false	true	true	true
6	definition/bo...	9e092750e45e565f00...	Reset slicers	ReportSectionfc...	Reset slicers	ebe5be0e10909f...	false	false	true	true	true
7	definition/bo...	9e092750e45e565f00...	Reset slicers	ReportSectionfc...	Reset slicers	603490780f42e1...	false	false	true	true	true
8	definition/bo...	9e092750e45e565f00...	Reset slicers	ReportSectionfc...	Reset slicers	6c0c5084cb6743...	false	false	true	true	true
9	definition/bo...	e54fc0a29bc83595c0c9	Reset slicers with predefined ...	a20fb1fde3ecfd...	Reset slicers with prede...	79997ef3bd2bb1...	false	false	true	true	false
10	definition/bo...	e54fc0a29bc83595c0c9	Reset slicers with predefined ...	a20fb1fde3ecfd...	Reset slicers with prede...	f796735ec844e65...	false	false	true	true	false
11	definition/bo...	e54fc0a29bc83595c0c9	Reset slicers with predefined ...	a20fb1fde3ecfd...	Reset slicers with prede...	0e335cc3d2f2a0d...	false	false	true	true	false
12	definition/bo...	e54fc0a29bc83595c0c9	Reset slicers with predefined ...	a20fb1fde3ecfd...	Reset slicers with prede...	1f656fc7566e9a5...	false	false	true	true	false
13	definition/bo...	e54fc0a29bc83595c0c9	Reset slicers with predefined ...	a20fb1fde3ecfd...	Reset slicers with prede...	1b18abc56603b5...	false	false	true	true	false
14	definition/bo...	e54fc0a29bc83595c0c9	Reset slicers with predefined ...	a20fb1fde3ecfd...	Reset slicers with prede...	d42c4b58cb7aca...	false	false	true	true	false
15	definition/bo...	e54fc0a29bc83595c0c9	Reset slicers with predefined ...	a20fb1fde3ecfd...	Reset slicers with prede...	b29c5c7097a1a1...	false	false	true	true	false
16	definition/bo...	e54fc0a29bc83595c0c9	Reset slicers with predefined ...	a20fb1fde3ecfd...	Reset slicers with prede...	a544984ce5070b...	false	false	true	true	false
17	definition/bo...	e54fc0a29bc83595c0c9	Reset slicers with predefined ...	a20fb1fde3ecfd...	Reset slicers with prede...	74fccbebe29f4d9...	false	false	true	true	false

Semantic Link Labs created by Michael Kovalsky
Semantic Link Labs PBI Overview

#FabricFebruary

JSON Report Theme — For the Nerdy Data Storytellers

Home / JSON to Power BI

JSON Report Theme to Power BI

Power BI custom report themes provide granular control over many aspects of a report theme. It's crucial to build a solid, documented and adopted in an organization for consistency and efficiency.

Theme colors in Power BI

Power BI's data color system lets you define up to 8 colors that map directly to your data points. Along with these colors, Power BI automatically generates 5 different shades of each color that can be dynamically applied throughout the file.

KPI & Divergent Colors

These properties set the status colors used by the waterfall chart and the KPI visual or set the various gradient colors in the conditional formatting dialog box.

Use them to refer in conditional formatting measures where you can simply in the measure, instead of hard-coding a HEX, use "good", "neutral", "bad", "minimum" or "maximum"

Structural Colors

These color classes set the structural colors for elements in the report, such as axis gridlines, highlight colors, and background colors for visual elements.

Try yourself?
Download at GitHub

Active Report Theme:
DKH Self-Service Report Theme

Theme Colors 1-8
For data visualization

Theme	HEX	ID
	#367cff	1
	#fa8100	2
	#6cc6cb	3
	#aa77dd	4
	#d14576	5
	#b26d6d	6
	#8b9fd4	7
	#eae5c9	8

Learn more

Remember to think of brand guidelines together with enough categorical values along side thinking contrast and call-to-action and WCAG and color-blindness.

KPI Colors
For KPI performance status context

KPI	HEX	Property
	#37a78f	Good
	#f2f2f2	Neutral
	#a74d37	Bad

Divergent Min & Max Colors
For divergent heat map

Divergent	HEX	Property
	#fa8100	Minimum
	#f2f2f2	Center
	#367cff	Maximum
		Null

Learn more

```
Example measure diff Color =
IF(
    [Revenue LY %] > 0,
    "good",
    "bad"
)
```

Structural Colors
Non-data ink for colors except the data colors

Structural	HEX	Property
	#485257	Background
	#F1F3F4	BackgroundLight
	#F1F3F4	BackgroundNeutral
	#485257	Foreground
	#485257	ForegroundNeutralSecondary
	#606E74	ForegroundNeutralTertiary
		Hyperlink
	#e6e6e6	TableAccent
		Visited Hyperlink

Learn more

Any formatting elements that aren't included in the JSON file revert to their default values and settings.

Visual Styles
15 of 52 visual styles defined in theme

Visual | Object | --

Image	VisualStyleAttribute	Defined in JSON Theme	Type
	textbox	textbox	Object
	tableEx	tableEx	Visual
	slicer	slicer	Visual
	shape	shape	Object
	report	report	Object
	pivotTable	pivotTable	Visual
	pageNavigator	pageNavigator	Object
	page	page	Object
	multiRowCard	multiRowCard	Visual
	kpi	kpi	Visual
	image	image	Object
	cardVisual	cardVisual	Visual
	bookmarkNavigator	bookmarkNavigator	Object
	advancedSlicerVisual	advancedSlicerVisual	Visual
	actionButton	actionButton	Object
	aiNarratives		Visual
	areaChart		Visual
	azureMap		Visual
	barChart		Visual
	card		Visual
	clusteredBarChart		Visual
	clusteredColumnChart		Visual
	columnChart		Visual
	decompositionTreeVisual		Visual
	donutChart		Visual
	filledMap		Visual
	filter		Object
	funnel		Visual
	gauge		Visual
	group		Object
	hundredPercentStackedAreaChart		Visual
	hundredPercentStackedBarChart		Visual
	hundredPercentStackedColumnChart		Visual

Visual Styles

Be aware of the new preview visuals as the report theme schema can change more often on these.

Recommendation:
Set Visual Styles for frequently used visuals like
- Card New Visual
- Matrix
- Table
- Line chart
- Column chart
- Bar chart
- Slicer
- Action button
- Page Navigator

Attribute: Filter by keyword | Property: All | Value: Filter by keyword

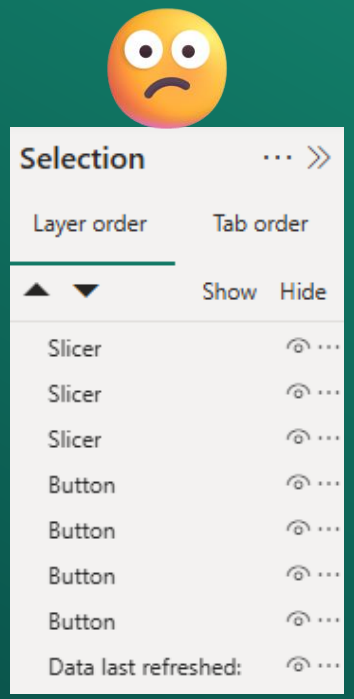
Detail Properties of Visual Styles in Your JSON Theme
Click on a Visual Style to filter

Image	Name	Attribute	Property	Value
	bookmarkNavigator	$id	fill	selected
			shape	default
			Text	selected
		border	Color	#AEB8BD
		bottom	*	0
		color	Border	#AEB8BD
		fillColor	fill	#F1F3F4
		fontColor	Text	#30373A
		fontFamily	Text	Segoe UI Semibold
		fontSize	Text	10,5
		left	*	0
		radius	Border	8
		right	*	0
		roundEdge	shape	8
		show	Border	FALSE
			fill	TRUE
			Outline	FALSE
		tileShape	shape	rectangle

David Kofod Hanna: JSON to Docs Live report

#FabricFebruary

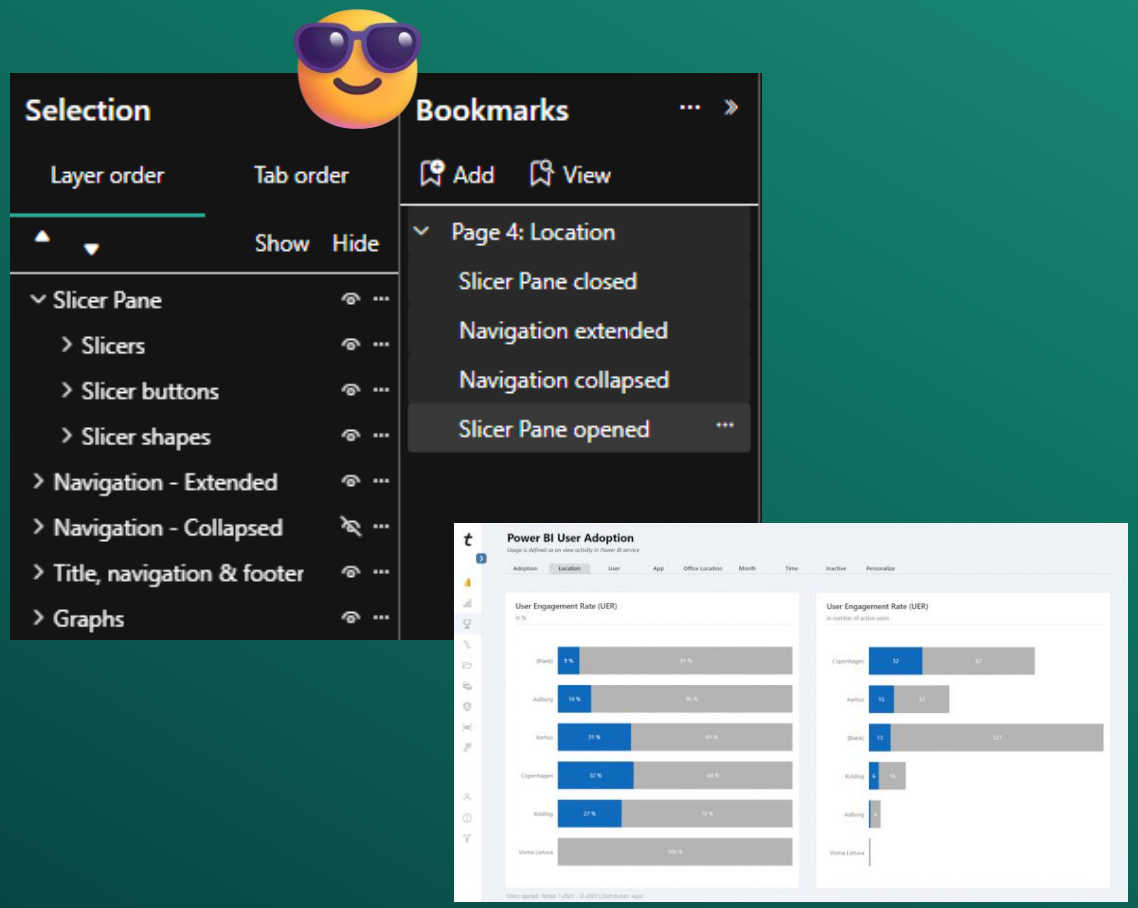
Lack of naming convention in “Selection Pain”



David Kofod Hanna: https://www.linkedin.com/pulse/introducing-bookmark-killer-david-kofod-hanna-90quf/

Report Visual Elements

– especially important if using bookmarks



💡 My Standard:

For non-visual objects:
Use the visual object as Prefix + "–" and then a meaningful name for the object "Slicer – Year" or "Image – Logo"
Relevant for: Slicer, Textbox, Shapes, Images, Button, Page Navigator, Bookmark Navigator, etc.

For visual elements the name of the object is the Title in the visual, thus can't be prefixed with Bar chart, etc.

Group visual elements into e.g.
"Slicer Pane",
"Title, Navigation & Footer",
"KPI's"
"Graphs".

Layer order from top left corner to bottom right corner
(F or Z structure)

For use cases where only Bookmarks can solve the report user need and counting the total cost of ownership, use Selected Visuals and the Group of visuals.
Group Bookmarks together and name it prefix of page no and page name "Page 4: Sales Region Analysis"

David Kofod Hanna: https://www.linkedin.com/pulse/introducing-bookmark-killer-david-kofod-hanna-90quf/

#FabricFebruary

Power BI Documentation System

Automated or Script | Manual | Requires Fabric SKU

Power Query {M}

- Query Folders (Manual)
- Applied Steps (Rename + Properties) (Manual)
- Table Properties (Manual)
- Parameters for easy switch (Automated or Script)
- Last Refresh & Measure Table & Table.Profile (Automated or Script)
- Powerqueryformatter.com (Automated or Script)

Semantic Model

- Format DAX & Measure Descriptions (Automated or Script)
- Best Practice Analyzer (Automated or Script)
- INFO.VIEW Model Docs (Automated or Script)
- Display Folders for Measures & Columns (Automated or Script)
- Table Groups (Automated or Script)
- Semantic Model Docs (Manual)

Power BI Desktop

- Model Layout View per Fact (Manual)
- DAX Query View + VertiPaq Analyzer (Automated or Script)
- Unpin Ineffective Default Visuals (Manual)
- Report Theme JSON Docs (Automated or Script)
- Report Visual elements in Selection Pane (Manual)
- Report Docs (Manual)

App

- Video and PDF in an App (Manual)
- Notebooks in an app (Requires Fabric SKU)
- OneLake Catalog (Automated or Script)
- All into a Lakehouse (Requires Fabric SKU)
- External Tools & Copilot (Requires Fabric SKU)
- End-User Docs (Manual)

Purpose for docs:
Clear, Concise, Complete, Consistent, Correct, Consumable

Documentation and transparency from model to app

From report consumers to report developers to semantic model developers and data ingest

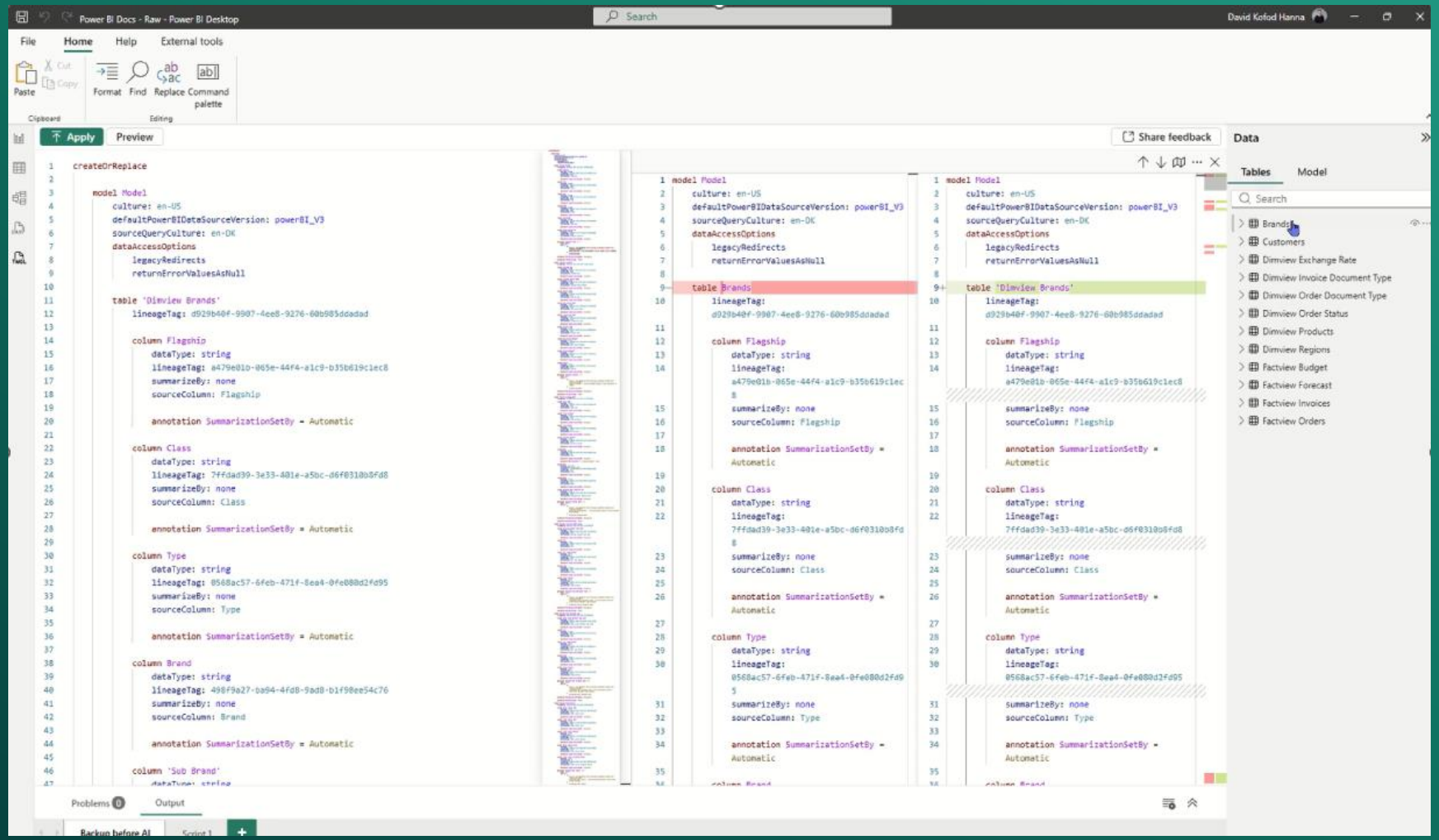
Best Practice Analyzer Rules to highlight violations and severity of best practices

Tabular Editor 2/3 for Semantic Model and DAX scripts

Semantic Link Labs in Fabric Notebooks for automation like never before

#FabricFebruary

Track Semantic Model changes in TMDL View

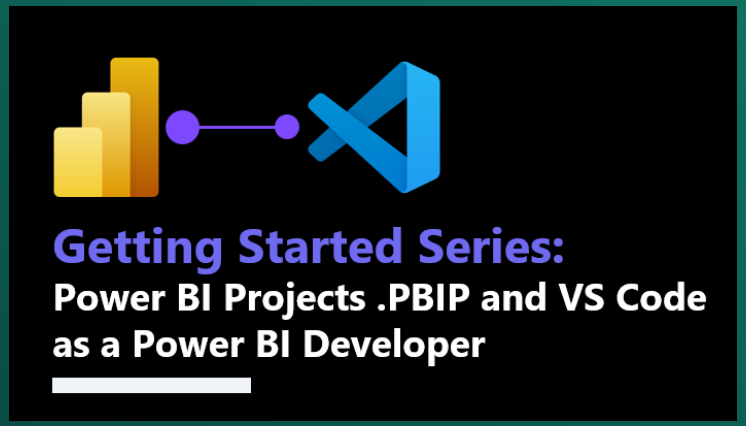


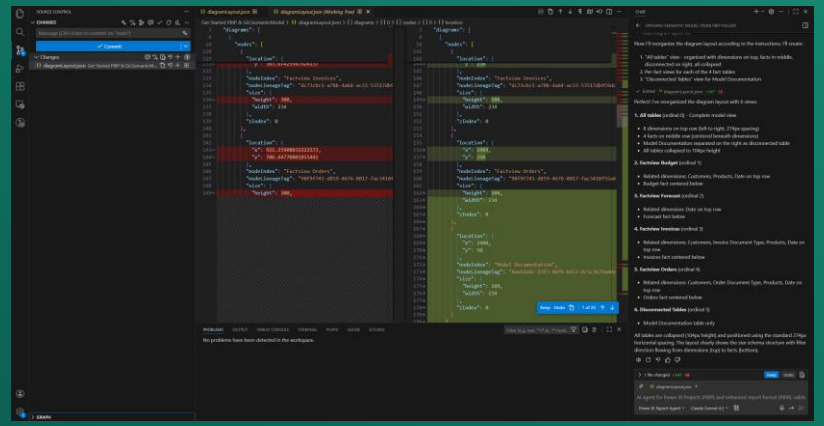
Git is your friend – also for Power BI developers

Transparency in changes

Comments to the changes

PBIP expected GA in 2026





David Hanna's Getting Started Series on PBIP, VS Code and Git:
https://www.linkedin.com/posts/davidkofod_get-started-series-pbip-x-vs-code-setup-activity-7399526116077531136-3cKf

🪄 AI, please write my documentation

Power BI Documentation System

Automated or Script | Manual | Requires Fabric SKU | GitHub Copilot with MCP server Agent Mode and .PBIP

Power Query {M}

- Query Folders
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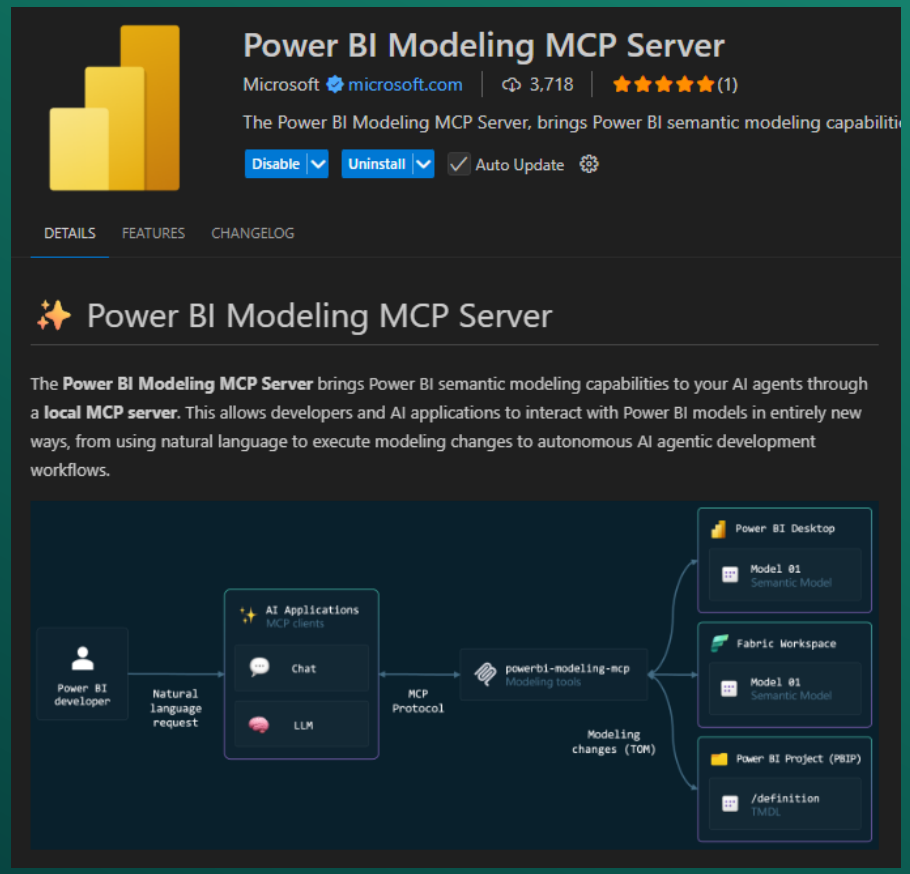
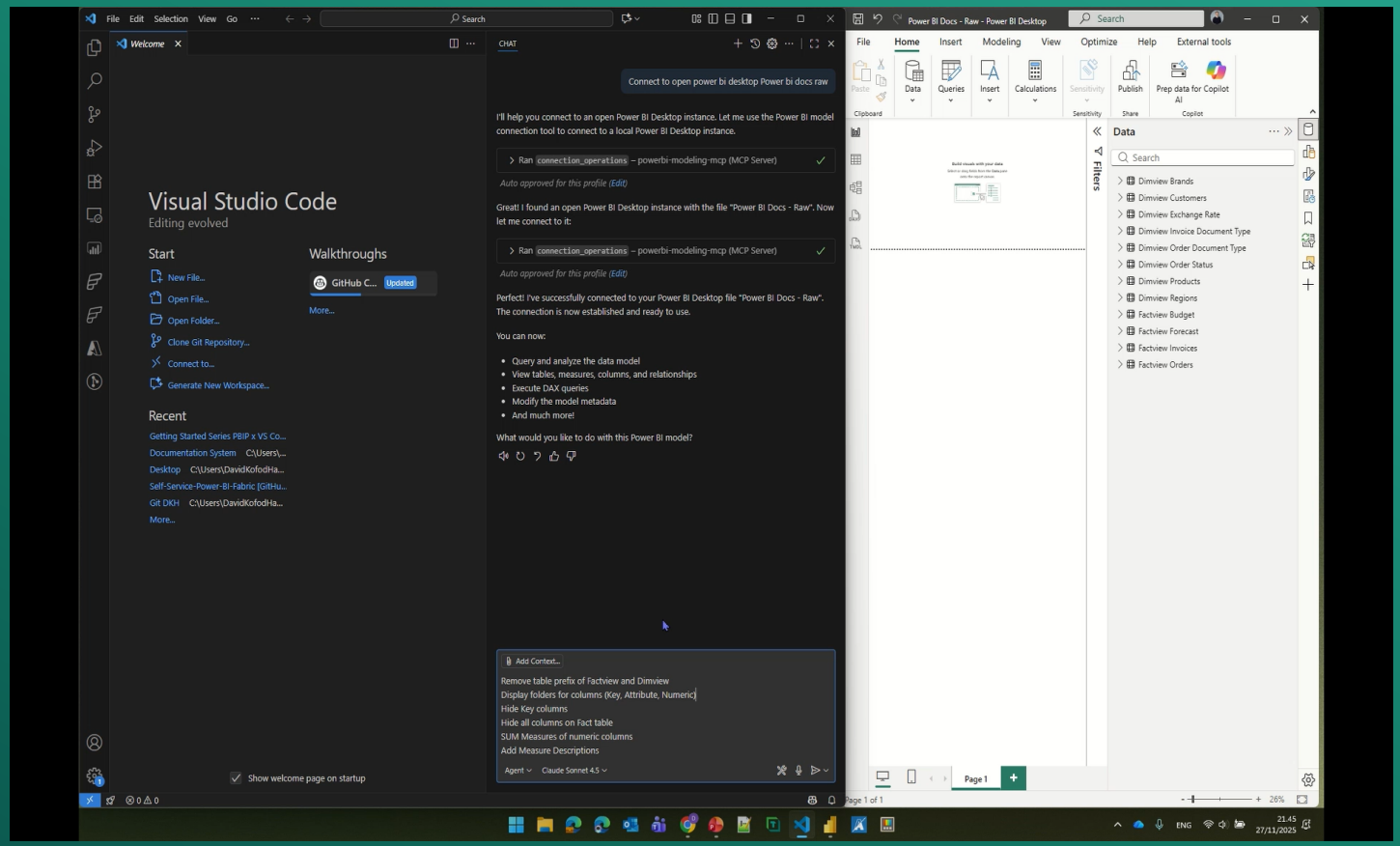
Tabular Editor 2/3 for Semantic Model and DAX scripts

Semantic Link Labs in Fabric Notebooks for automation like never before

Agentic Power BI Development

with GitHub Copilot and Power BI Modeling MCP Server in Visual Studio Code





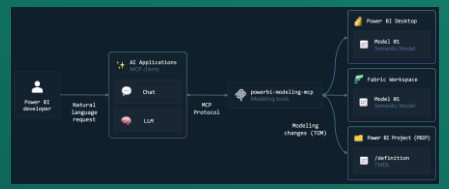
Get Started Guide by David Kofod Hanna:
https://www.linkedin.com/pulse/get-started-power-bi-modeling-mcp-server-developers-david-kofod-hanna-awatf

#FabricFebruary

PBIR: “What about me?”

TMDL
.SemanticModel

Power BI Modeling MCP Server
& Tabular Editor for semantic models...

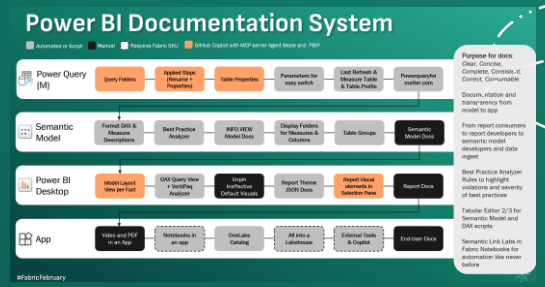


PBIR
.Report

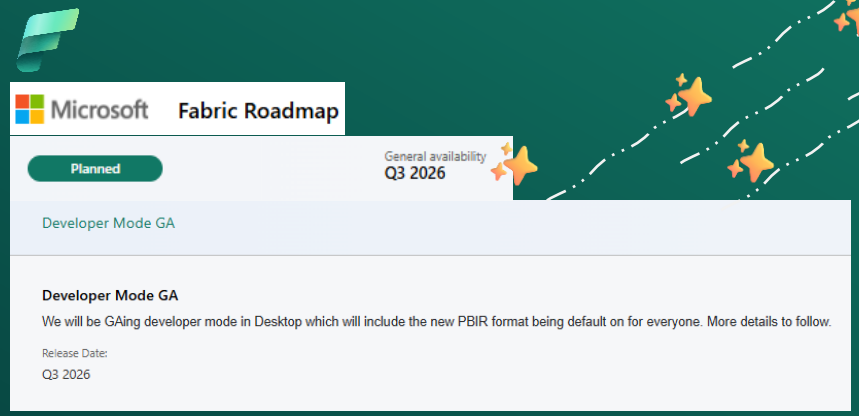
What about me?

Build your own custom Power BI Report Agent

Let me help you
GitHub Copilot Assistant
Instructions.json



PBIR
.Report



Thank you

Fabric Roadmap: https://roadmap.fabric.microsoft.com/?product=powerbi

David Kofod Hanna LinkedIn Posts: https://www.linkedin.com/feed/update/urn:li:activity:7419382341082554368/

#FabricFebruary

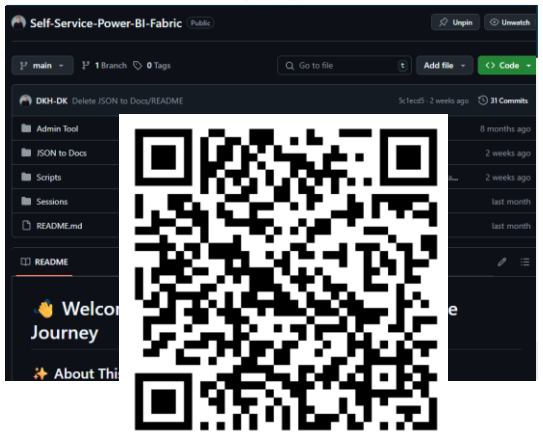
A Power BI Documentation System

– Not Just an Afterthought

Released on **GitHub** and LinkedIn article

#DocumentationCanBeFun

1. Create M Parameter	C# Script Source File
2. Create Global Measure Table	C# Script Source File
3. Create Last Refresh	C# Script Source File
4. Format Power Query (M)	C# Script Source File
5. Format DAX Measures	C# Script Source File
6. Measure DAX Expression as Description	C# Script Source File
7. Model Documentation DAX Script	TE3DAXS File
7. Model Documentation DAX	Text Document
8. Display Folders for Measures & Columns	C# Script Source File
9. Create Table Groups TE3	C# Script Source File
9. Table Groups in Power BI Desktop with INFO.VIEW DAX	File
9. Table Groups in Power BI Desktop with INFO.VIEW DAX Script	TE3DAXS File
10. Best Practice Analyzer Rules incl. John Kerski PQ Doc Rules	JSON Source File
11. Measure Dependency	DAX Query File
11. Model Issues	DAX Query File
11. Model Summary	DAX Query File
11. VertiPaq Column	DAX Query File
11. VertiPaq Memory Size	DAX Query File
11. VertiPaq Partition	DAX Query File
11. VertiPaq Relationship	DAX Query File
11. VertiPaq Table	DAX Query File
12. DKH Self-Service Report Theme - Raw Template	JSON Source File
12. JSON to Power BI Docs - Raw Template	Microsoft.MicrosoftPowerBIDesktop
13. Report Analysis Notebook - Michael Kovalsky	Jupyter Source File
14. Measure Maze Dependency Sandeep Pawar	Jupyter Source File
15. Design Document - Sample Fragment 01 - General and Scope - V0.1	Microsoft Word Document
15. Design Document - Sample Fragment 02 - Workflow Issues and Business Rules - V0.2	Microsoft Word Document
15. Design Document - Sample Fragment 03 - Data - V0.3	Microsoft Word Document
15. Design Document - Sample Fragment 04 - Reports - V0.4	Microsoft Word Document
MsBIP - Power BI Documentation System - David Kofod Hanna - May 2025	Microsoft PowerPoint Presentation



Open GitHub

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“You do not rise to the level of your goals, you fall to the level of your systems.”

– James Clear, Atomic Habits

“Well-designed systems lead to progress, even when motivation is low.”

– James Clear, Atomic Habits

Share your thoughts and help our speakers!

fabfeb.app/feedback