ENHANCING POWER BI DEVELOPMENT: IT IS FUN TO STAY AT THE T-M-D-L

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Power BI DC August 2025

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Analytics Engineer

The DAX Shepherd

Microsoft® MVP Most Valuable Professional

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https://thedaxshepherd.com/

📍 Nashville, TN, USA

🛠️ Began Career as a SQL Server DBA

➡️ Transitioned to Microsoft BI Stack

📦 Data Engineering to Data Modeling

🖋️ Simple Talk Author at Redgate

🧭 Fan of Dimensional Models & Doctor Who

SHOULDERS OF GIANTS

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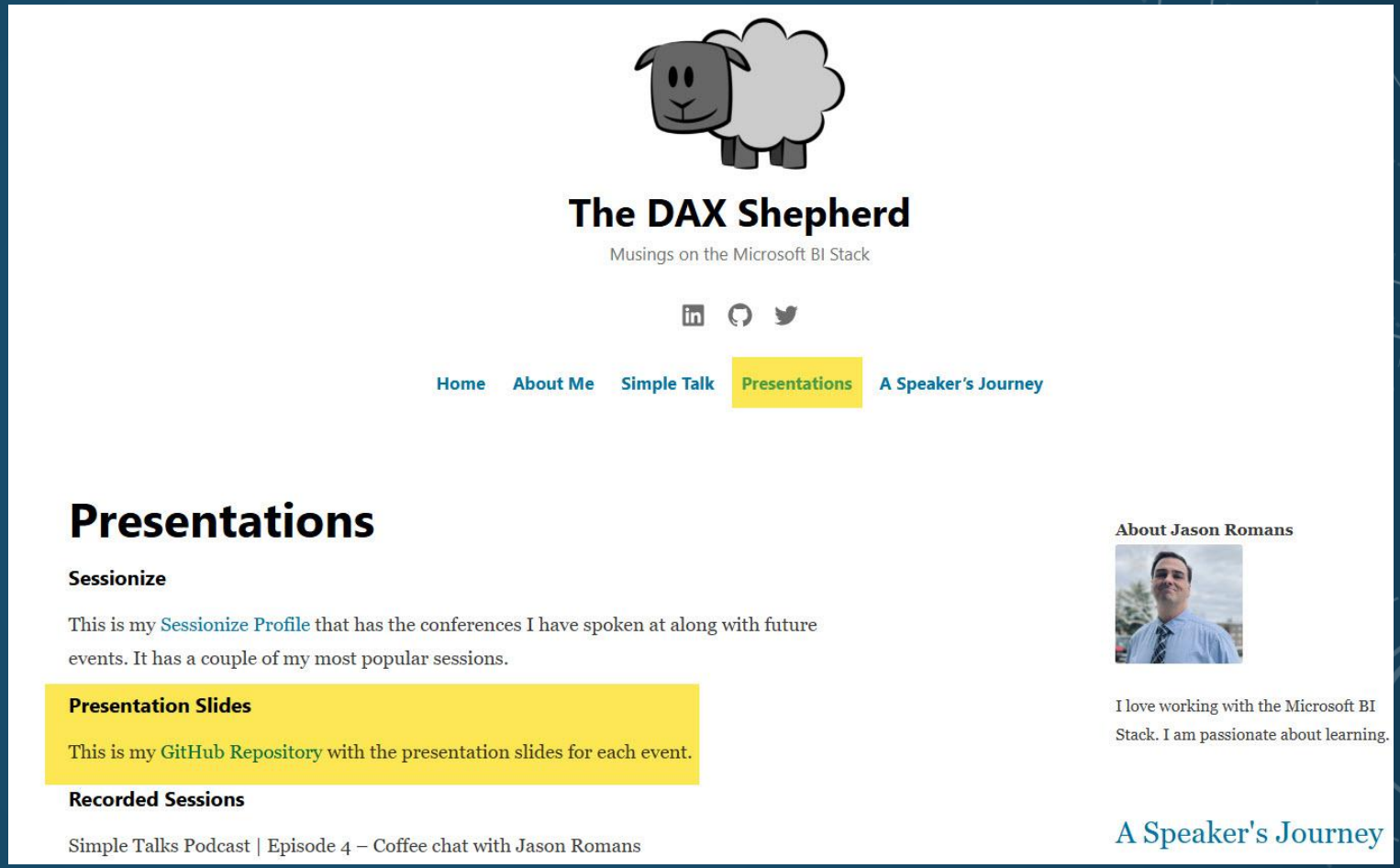
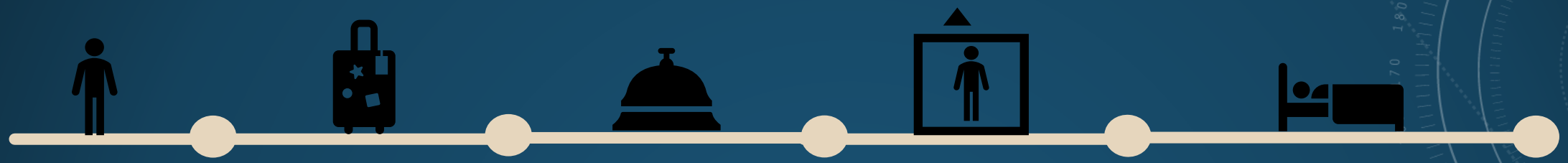
www.thedaxshepherd.com

SLIDES

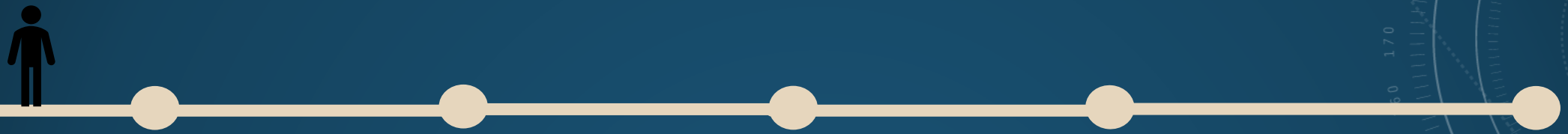


The TMDL Journey



1. What is TMDL
2. PBIP & TMDL
3. TMDL View
4. External Tools
5. Conclusion

The TMDL Journey

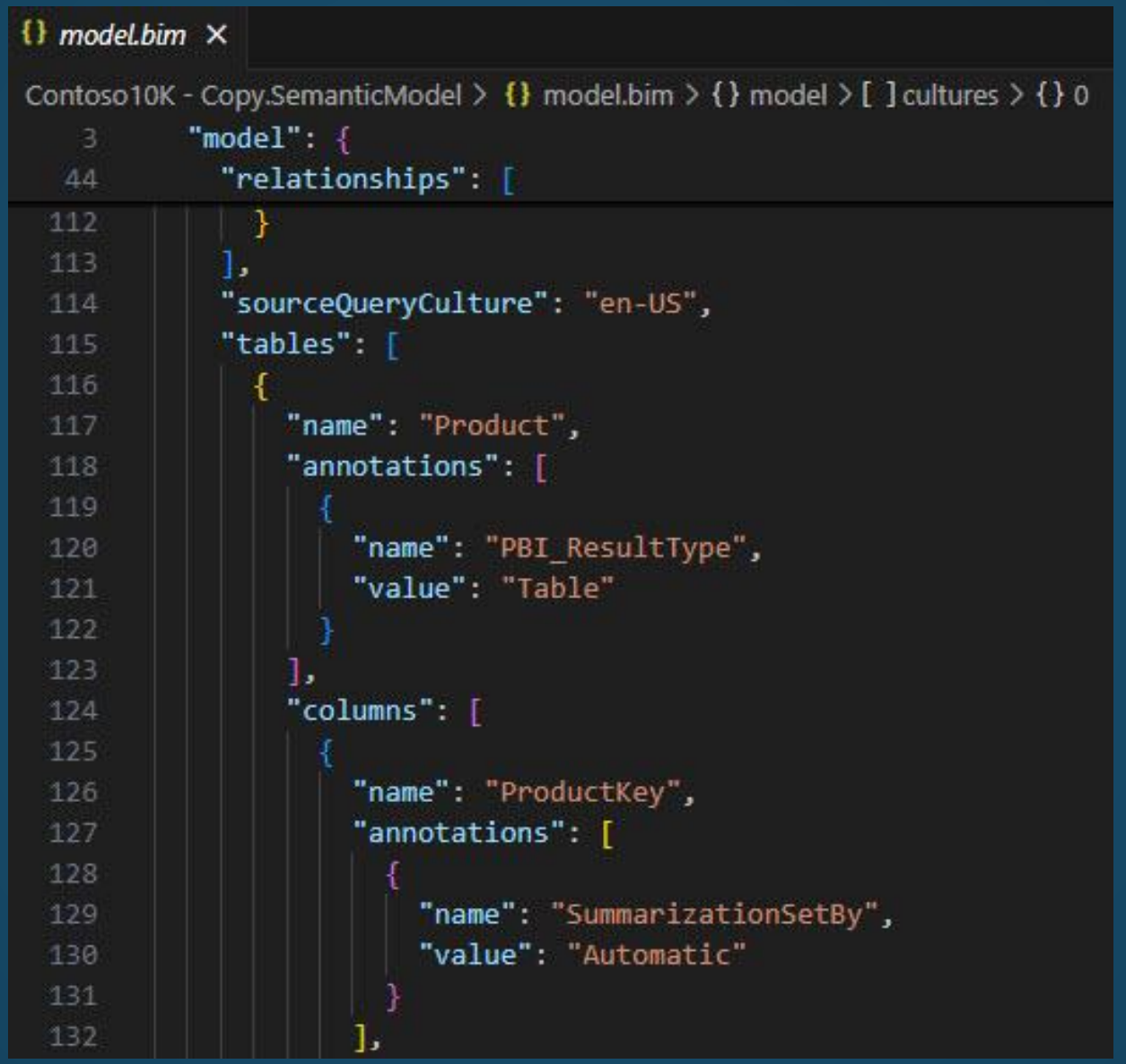


1. **What is TMDL**
2. PBIP & TMDL
3. TMDL View
4. External Tools
5. Conclusion

IN THE BEGINNING…

- SQL Server Analysis Services Tabular
  - Single BIM File
  - Tabular Model Scripting Language (TMSL)
    - JSON Format
- Creator of Tabular Editor - Daniel Otykier
  - TE started as a glorified JSON editor

Sample Model.Bim File



ISSUES WITH A SINGLE LARGE BIM FILE

- Difficult to comprehend
  - Too much text is focused on delimiters {}, ()
- Single, large file - harder to collaborate with others
- Power BI and Fabric are advancing toward complete version control across all assets
  - Does it exist if it is not in source control?

POWER BI PBIX FILE

In some ways a step backwards

POWER BI DEVELOPER MODE

- Store PBIX as a Project Folder
  - PBIP
- Enhanced Format for Semantic Model
  - TMDL
- Enhanced Format for Reports
  - PBIR

WHAT'S IN A NAME

TMDL

Tabular

Model

Definition

Language

KEY POINTS

- Ease of reading – similar to YAML
- Folder structure – separate files for each table, perspective, role, and culture
  - Increases collaboration
- Minimal delimiters
- Copilot

WHAT IT IS NOT

THIS IS NOT IN JSON FORMAT.

TMDL CREDIT

- Mathias Thierbach
  - Microsoft MVP
  - pbi-tools
- Community involvement

DUAL PURPOSE

1. Definition Language

2. Scripting Language

UNLOCKING THE POWER OF TMDL

With code:

- Create Date Table
- Turn on or off features
  - Auto Date/Time
  - Discourage Implicit Measures
- Quickly Create Objects
- Move object between Projects
- Make mass changes quickly

Example of TMDL

```
createOrReplace

    table Date
        lineageTag: 093cc89d-ab2b-423e-9810-be9d879345e1

        column Date
            dataType: dateTime
            formatString: Long Date
            lineageTag: 0bbfcfc4-20b3-48c4-b1d8-b3580bde1eee
            summarizeBy: none
            sourceColumn: Date

            annotation SummarizationSetBy = Automatic

            annotation UnderlyingDateTimeDataType = Date

        column Year
            dataType: int64
            formatString: 0
            lineageTag: 7de18a58-8189-4a64-a8b9-9b278f40a9d2
            summarizeBy: sum
            sourceColumn: Year
```

Quick TMDL Primer

- Whitespace for indenting
- Hierarchy
  - Table
    - Column
      - Properties
    - Measure
      - Properties

More TMDL

- Triple slash (///) syntax
  - Description – good for documentation
    - For example /// Table Description

Best Way to Learn Syntax

- Create Object in GUI
  - Script out object
- View snippets

The TMDL Journey

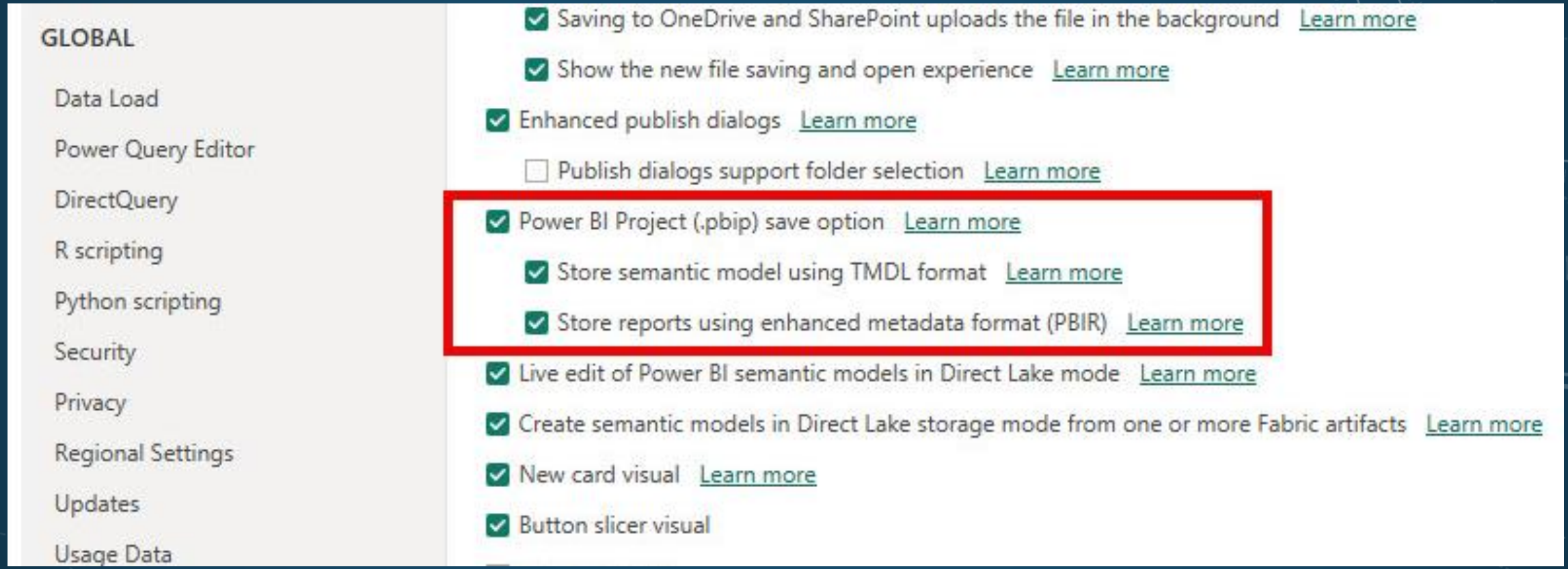
1. What is TMDL
2. PBIP & TMDL
3. TMDL View
4. External Tools
5. Conclusion

TMDL IN POWER BI DESKTOP

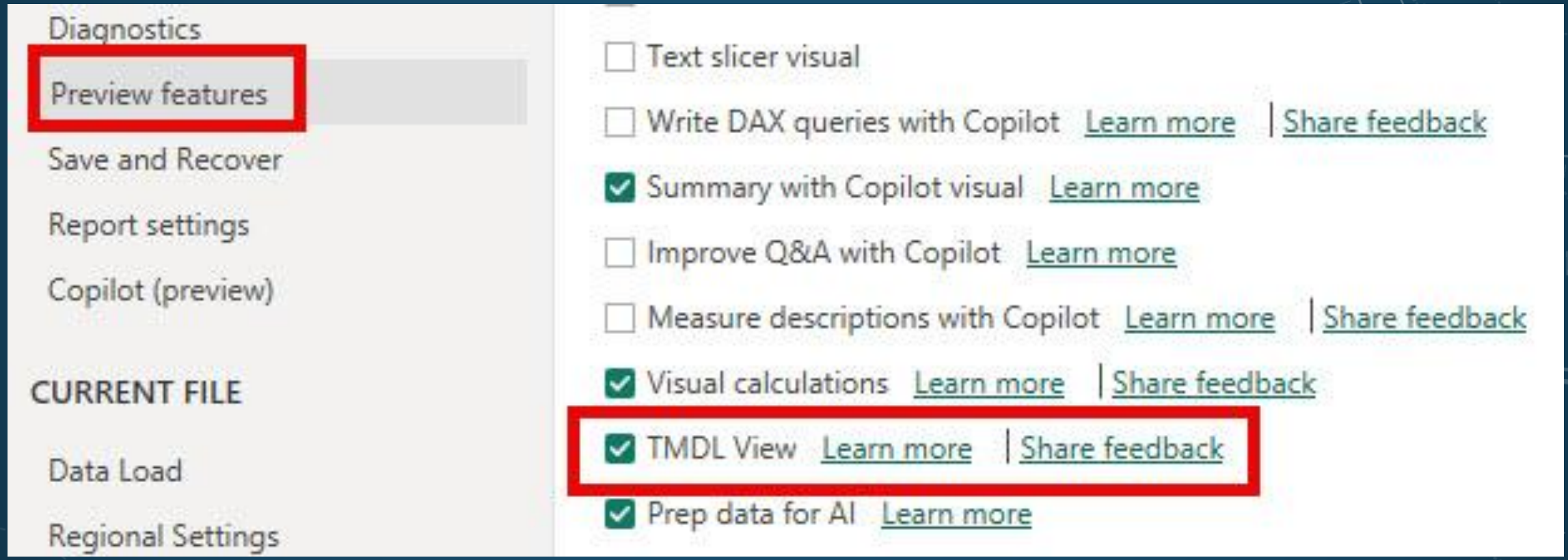
Related but independent

- Power BI Project (.pbip)
  - Store semantic model in TMDL format
- TMDL View
  - Can be used with PBIX files

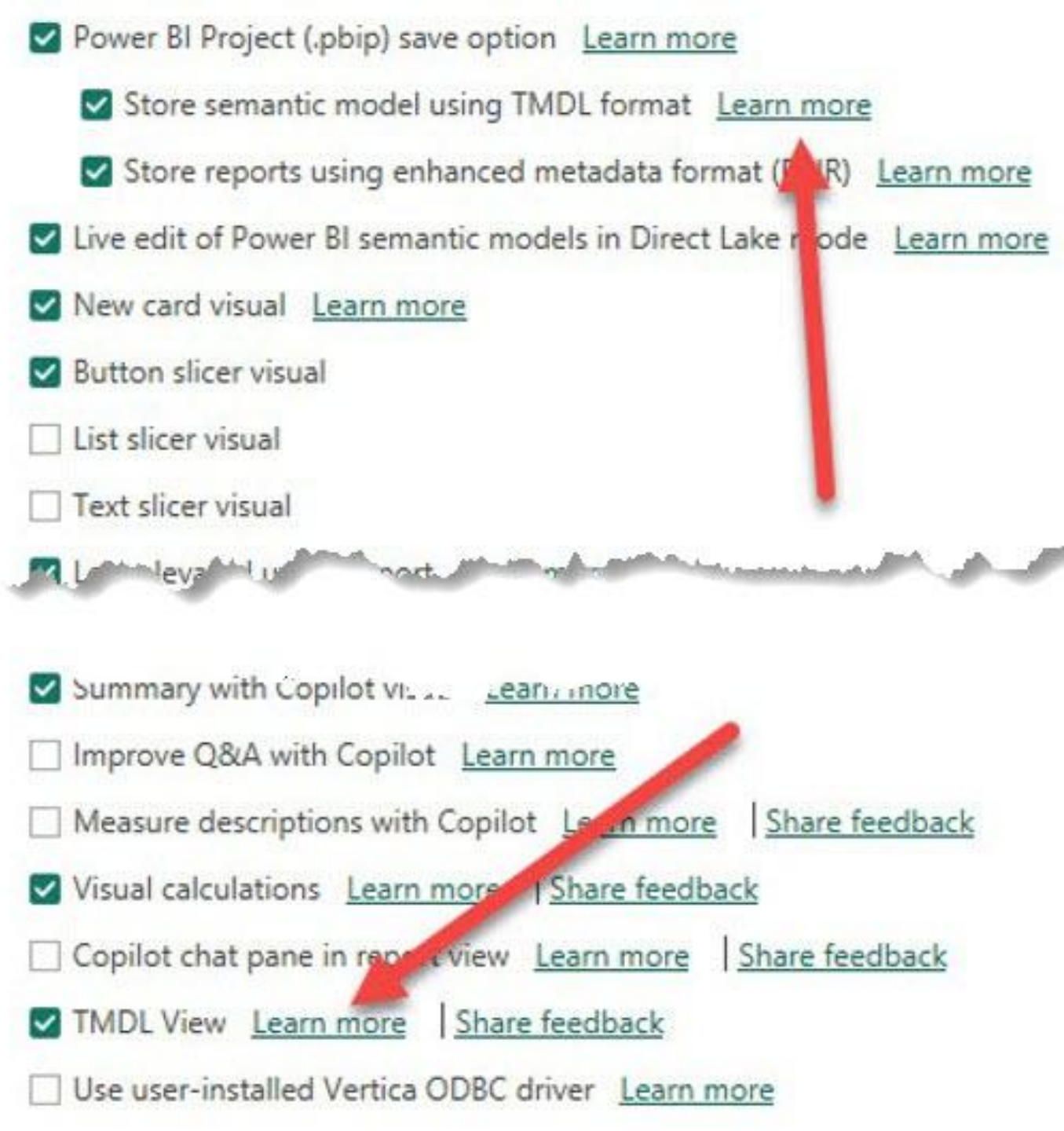
PREVIEW OPTIONS - POWER BI PROJECT
**PREVIEW: READ LIMITATIONS **



PREVIEW OPTIONS – TMDL VIEW
**PREVIEW: REVIEW OF LIMITATIONS **



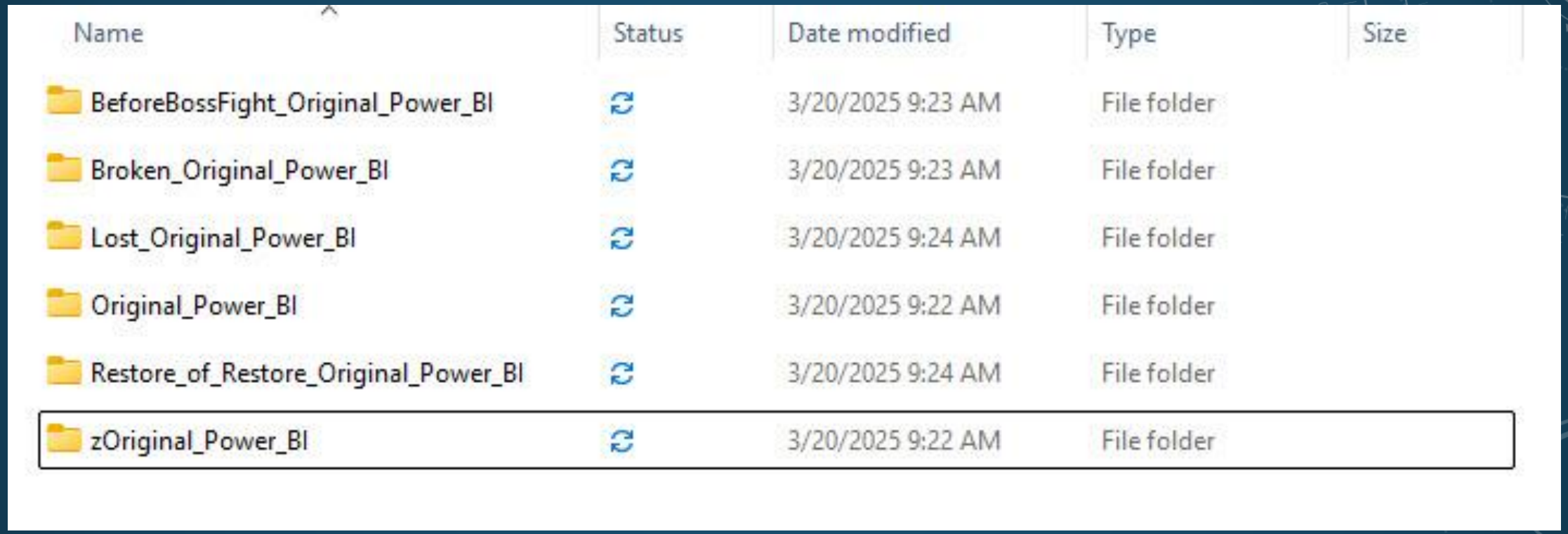
LEARN MORE


Power BI Project (.pbip) save option Learn more
Store semantic model using TMDL format Learn more
Store reports using enhanced metadata format (PBIR) Learn more
Live edit of Power BI semantic models in Direct Lake mode Learn more
New card visual Learn more
Button slicer visual
List slicer visual
Text slicer visual
Summary with Copilot Learn more
Improve Q&A with Copilot Learn more
Measure descriptions with Copilot Learn more | Share feedback
Visual calculations Learn more | Share feedback
Copilot chat pane in report view Learn more | Share feedback
TMDL View Learn more | Share feedback
Use user-installed Vertica ODBC driver Learn more

TMDL IN POWER BI DESKTOP

1. Power BI Project (.pbip)
   - Store semantic model in TMDL format

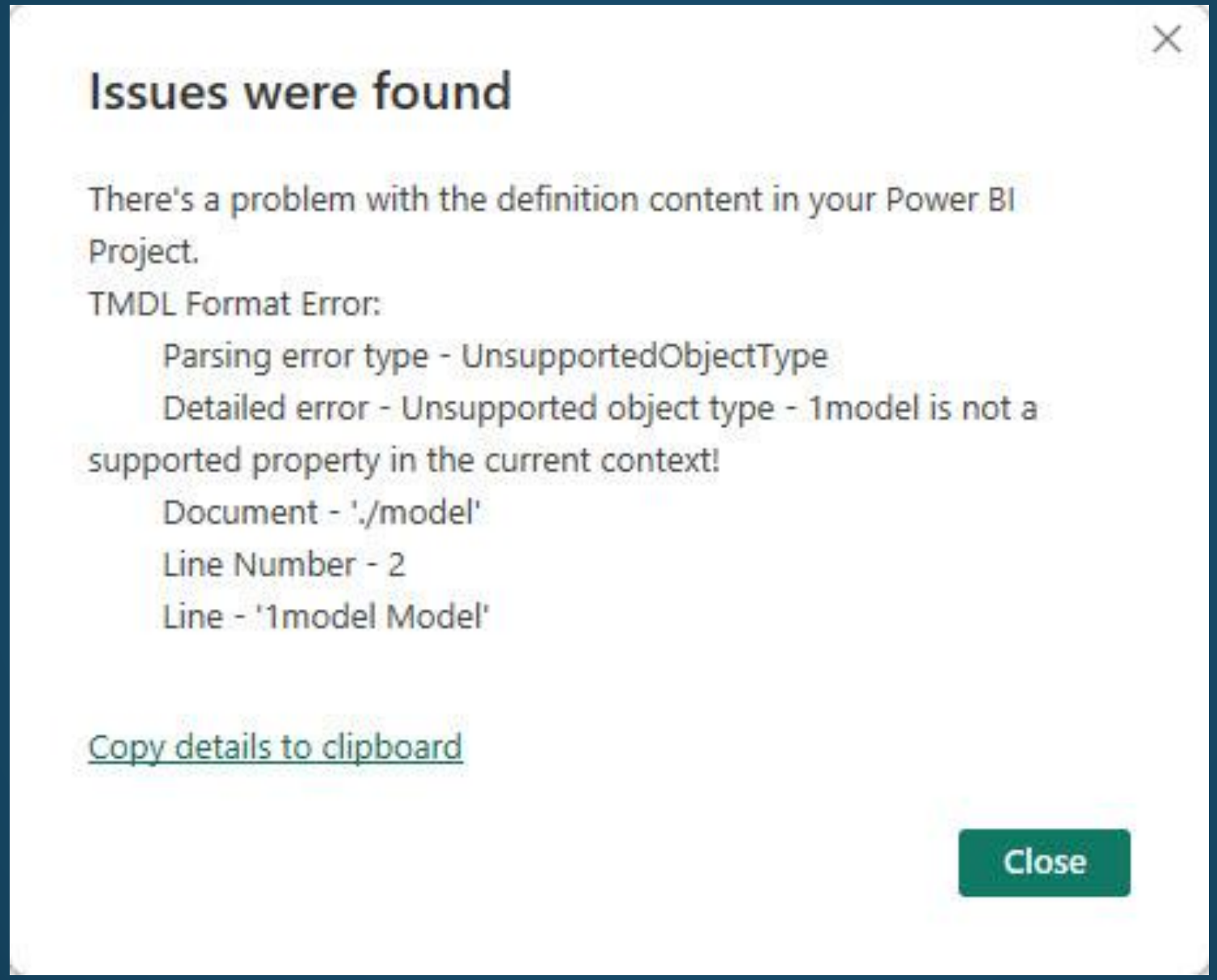
FOLDER RENAMING IS NOT VERSION CONTROL



Name	Status	Date modified	Type	Size
BeforeBossFight_Original_Power_BI		3/20/2025 9:23 AM	File folder	
Broken_Original_Power_BI		3/20/2025 9:23 AM	File folder	
Lost_Original_Power_BI		3/20/2025 9:24 AM	File folder	
Original_Power_BI		3/20/2025 9:22 AM	File folder	
Restore_of_Restore_Original_Power_BI		3/20/2025 9:24 AM	File folder	
zOriginal_Power_BI		3/20/2025 9:22 AM	File folder	

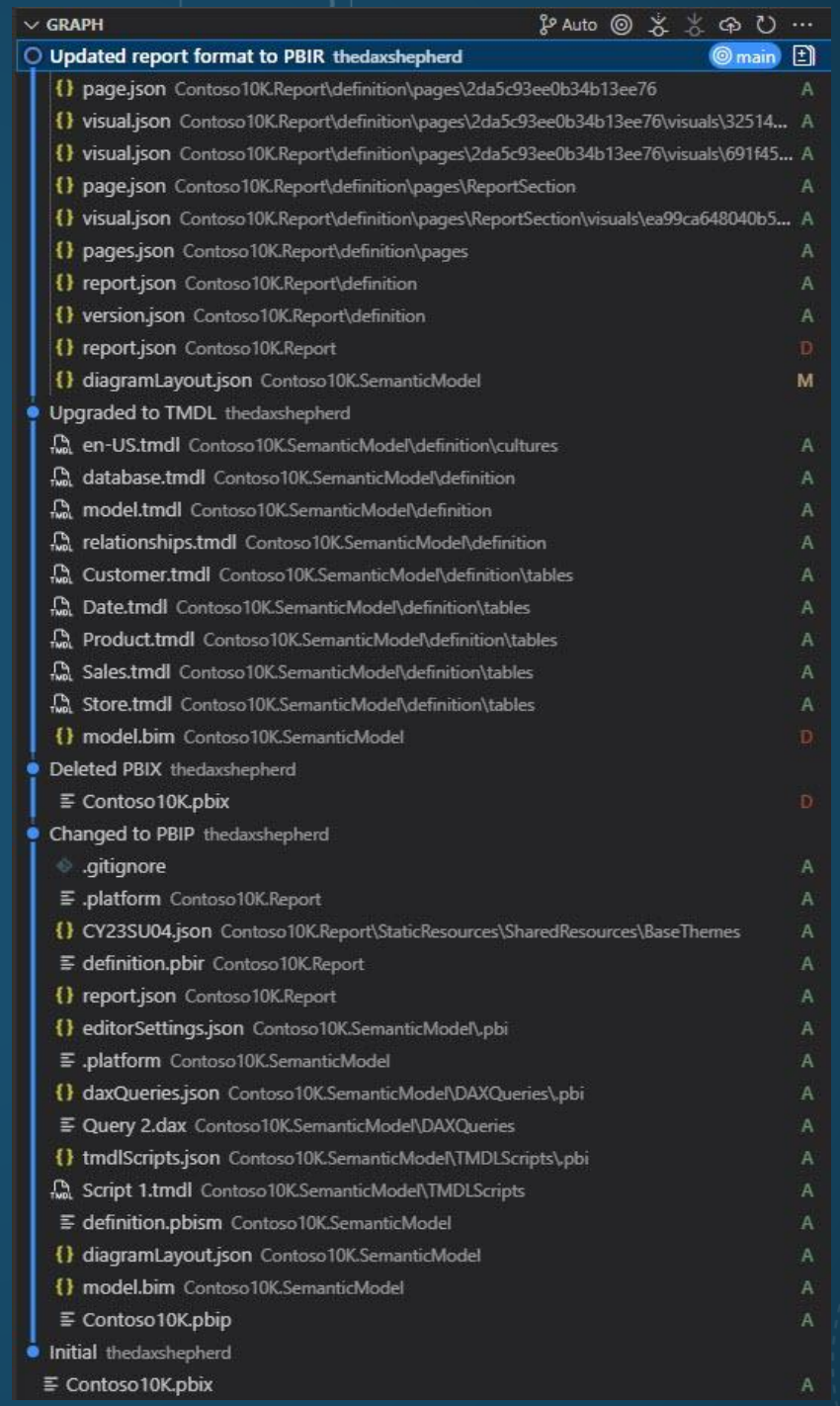
Visual Studio Code Demo

POWER BI – TMDL ISSUE



Git Changes

From PBIX to PBIP



Our Journey

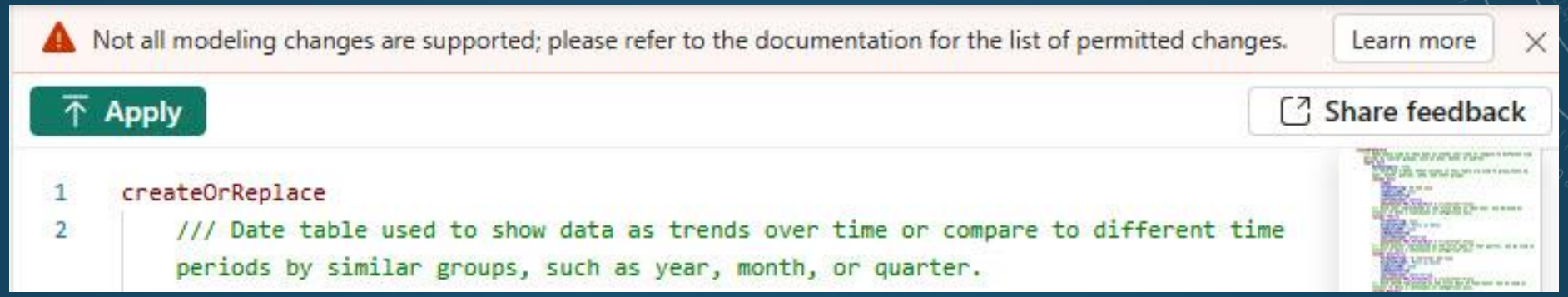
1. What is TMDL
2. PBIP & TMDL
3. **TMDL View**
4. External Tools
5. Conclusion

TMDL IN POWER BI DESKTOP

2.TMDL View

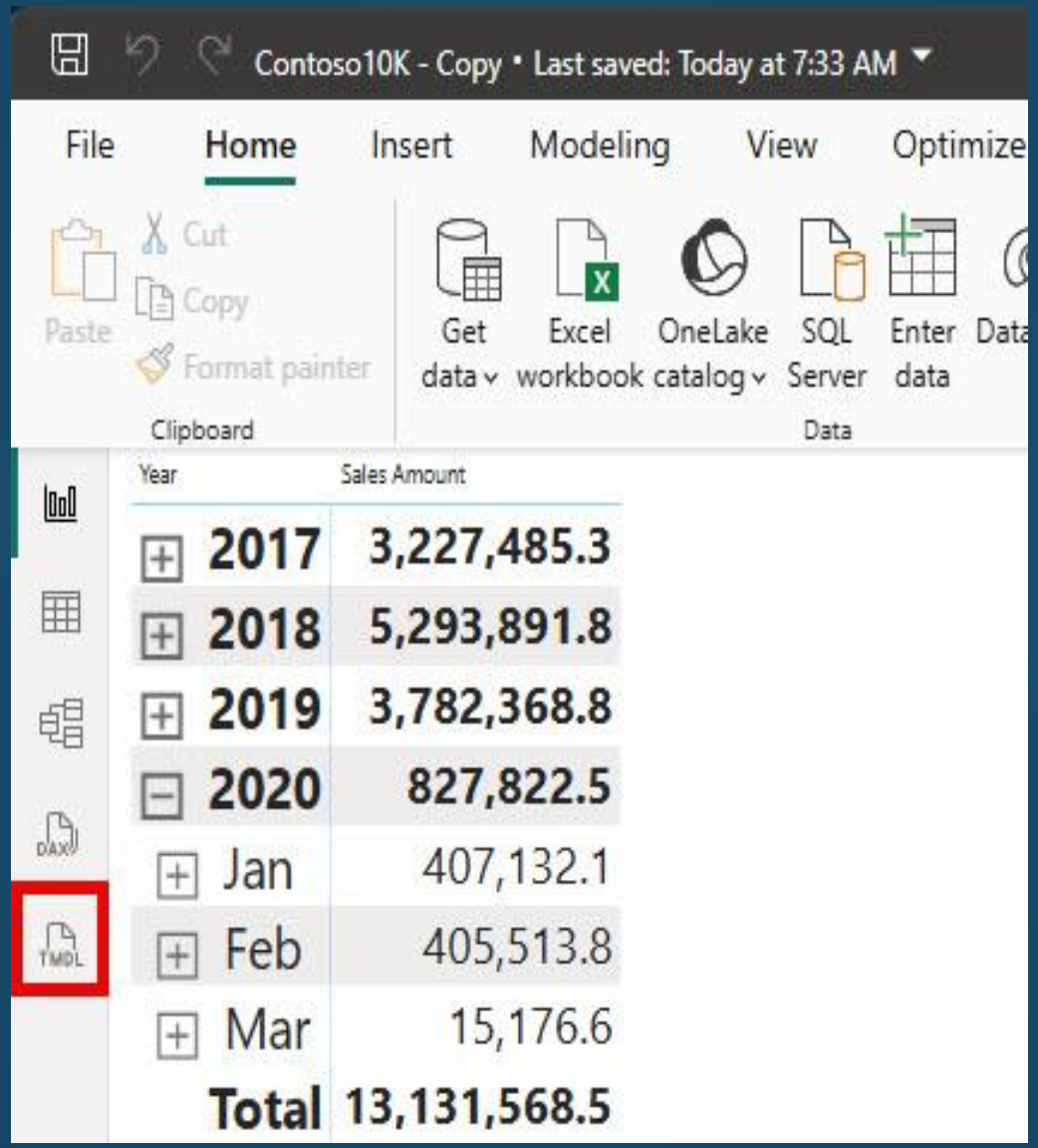
- Can be used with PBIX files

WARNING

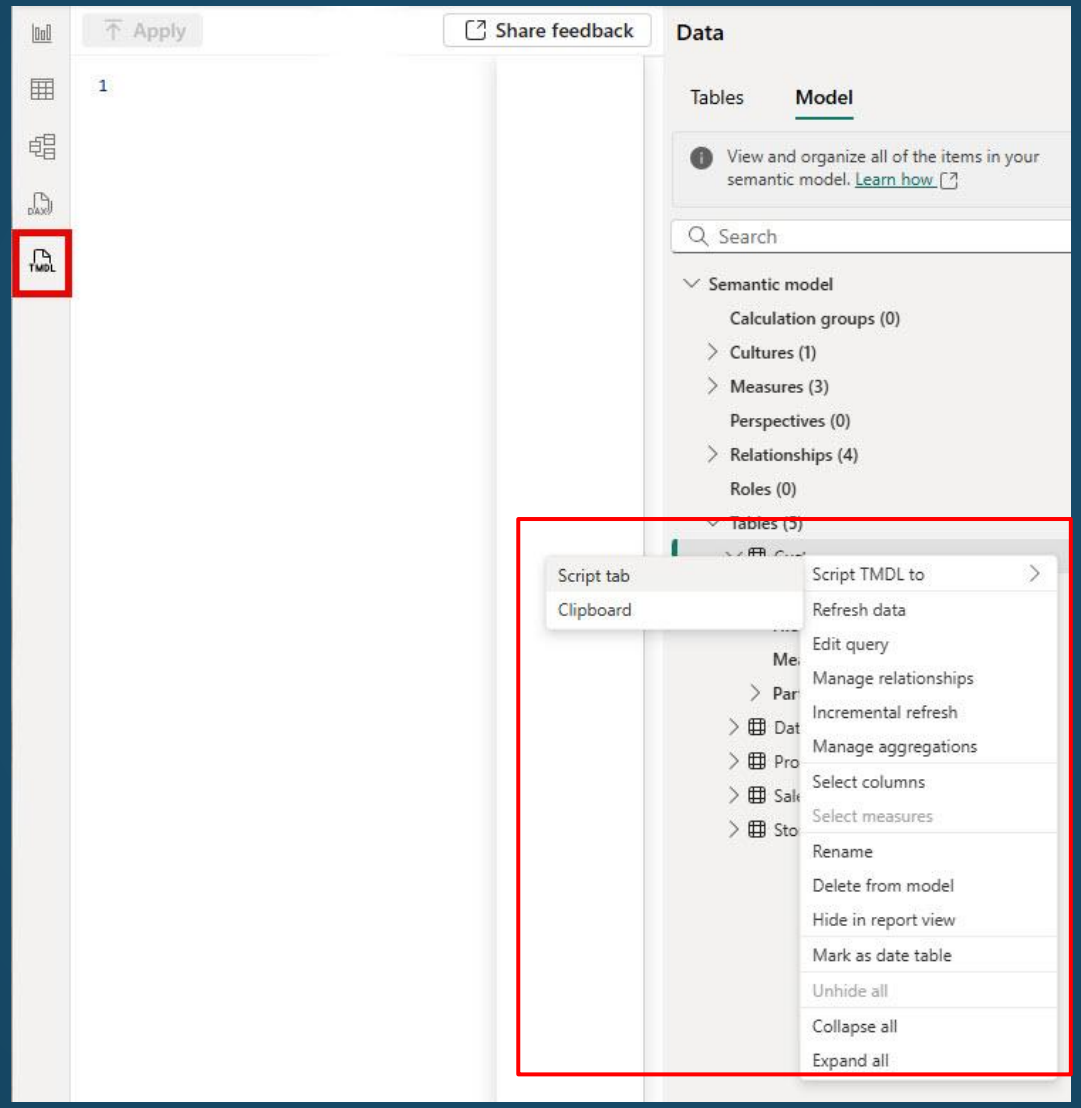


Learn More: https://learn.microsoft.com/en-us/power-bi/developer/projects/projects-overview#model-authoring

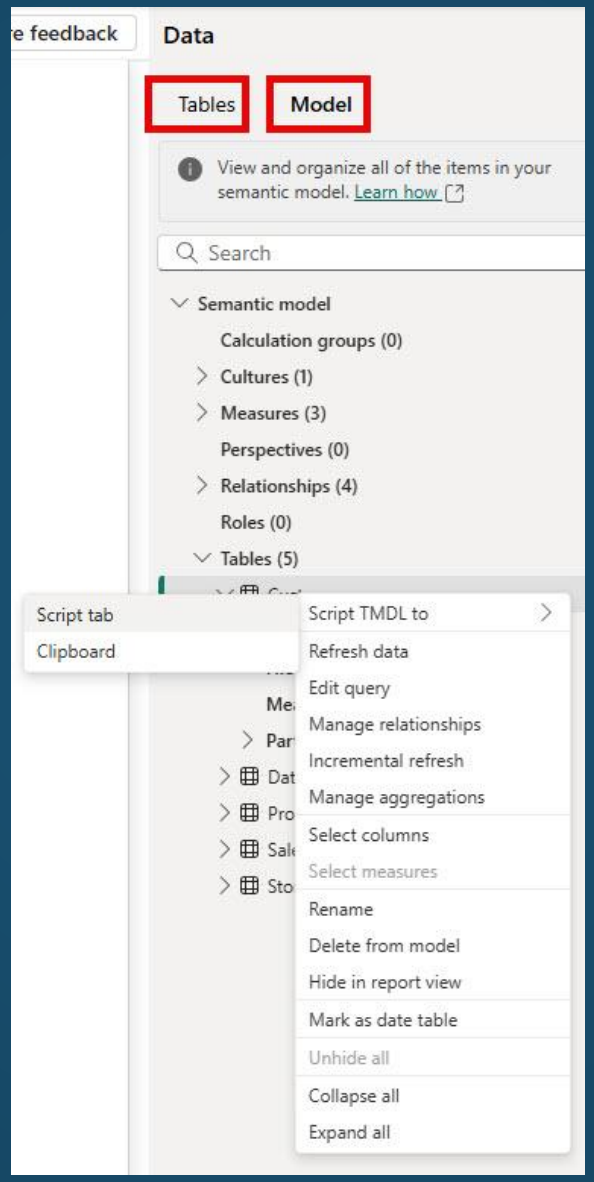
TMDL VIEW BUTTON



SCRIPT TMDL

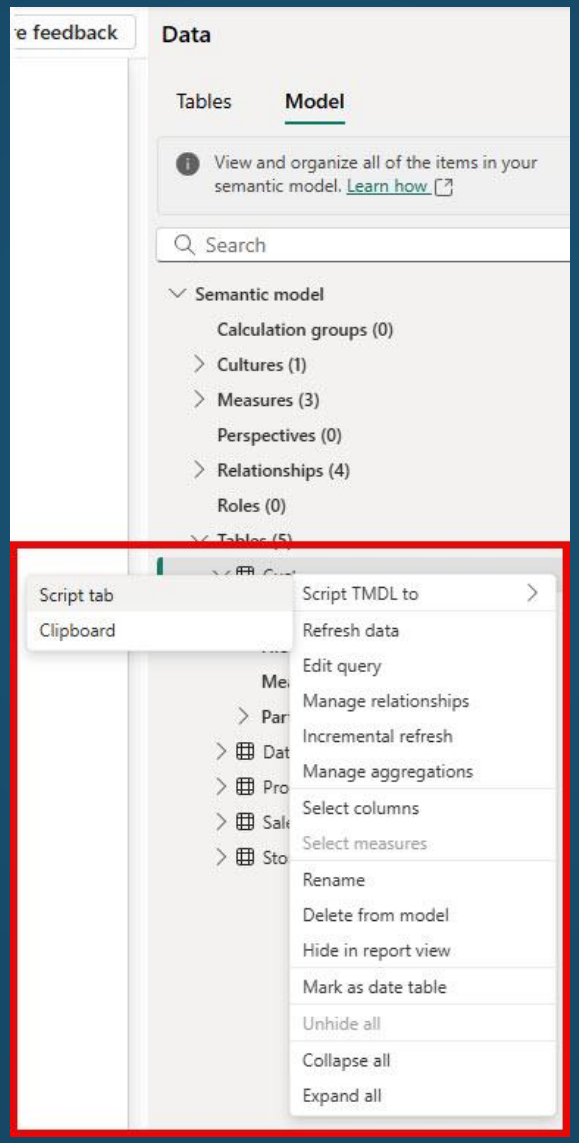

Apply
Share feedback
Data
Tables
Model
View and organize all of the items in your semantic model. Learn how
Search
Semantic model
Calculation groups (0)
Cultures (1)
Measures (3)
Perspectives (0)
Relationships (4)
Roles (0)
Tables (5)
Script tab
Clipboard
Script TMDL to
Refresh data
Edit query
Manage relationships
Incremental refresh
Manage aggregations
Select columns
Select measures
Rename
Delete from model
Hide in report view
Mark as date table
Unhide all
Collapse all
Expand all

CAN BE IN TABLE OR MODEL SELECTION

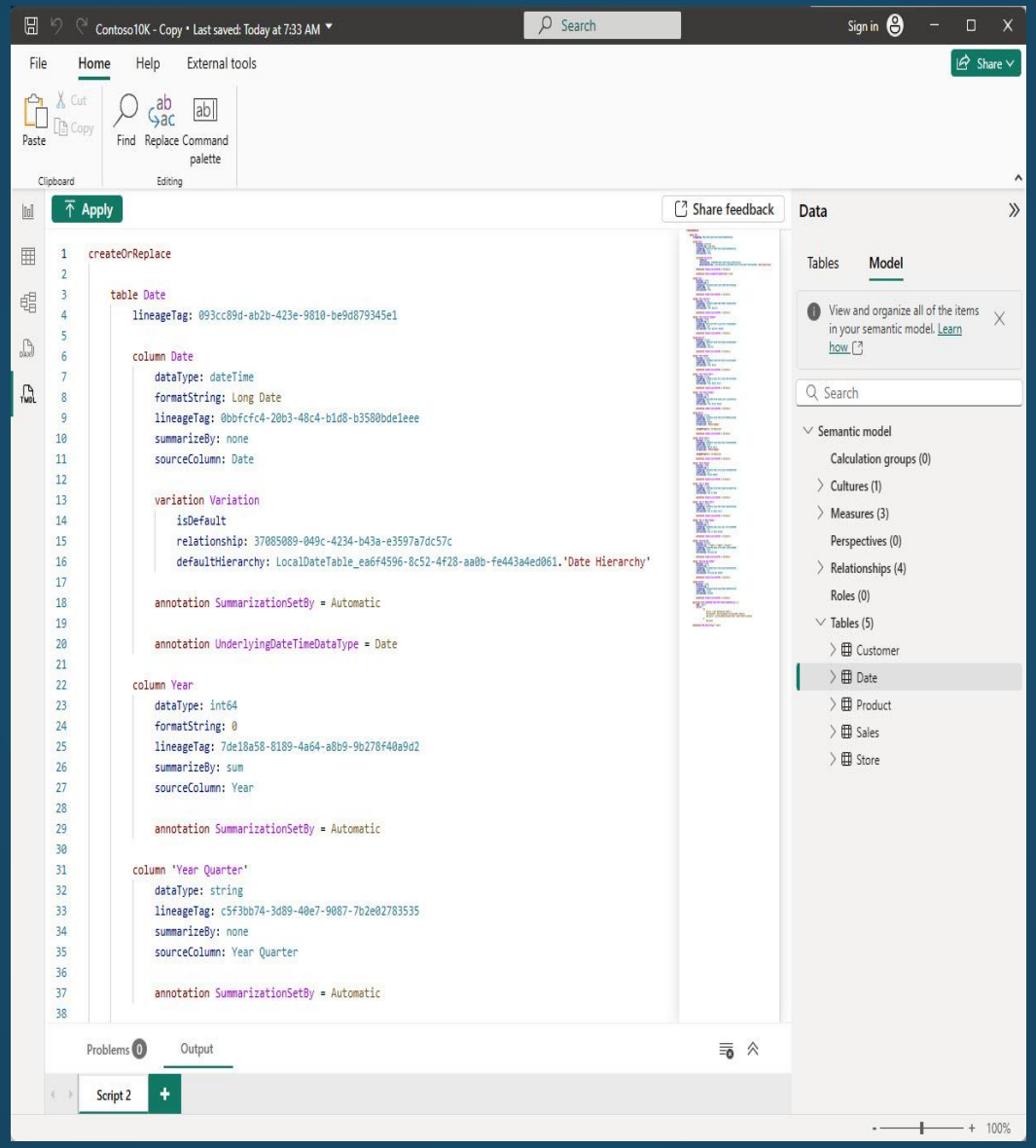


CAN SCRIPT TO SCRIPT TAB OR CLIPBOARD

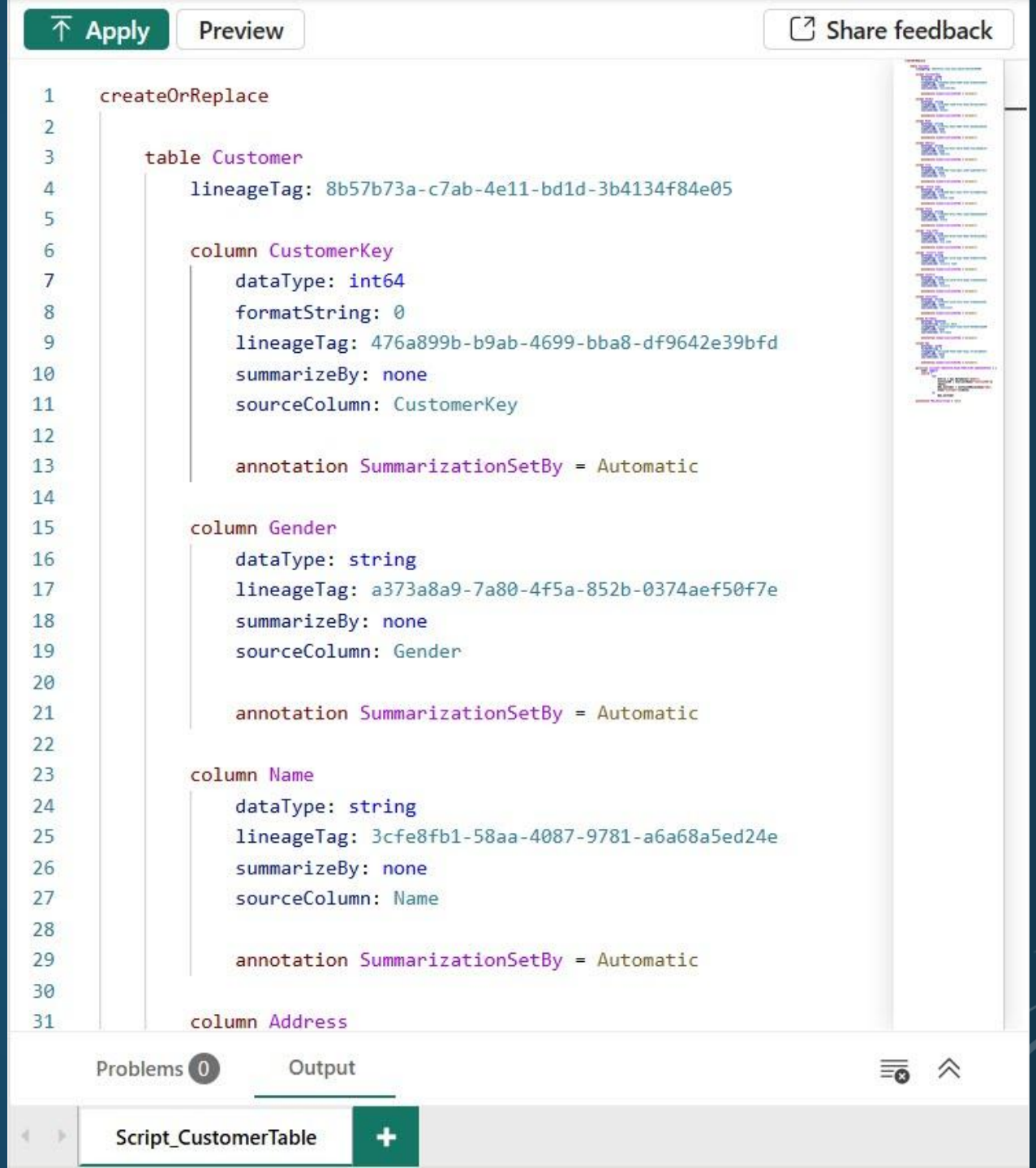
** ALSO DRAG AND DROP TO TAB **



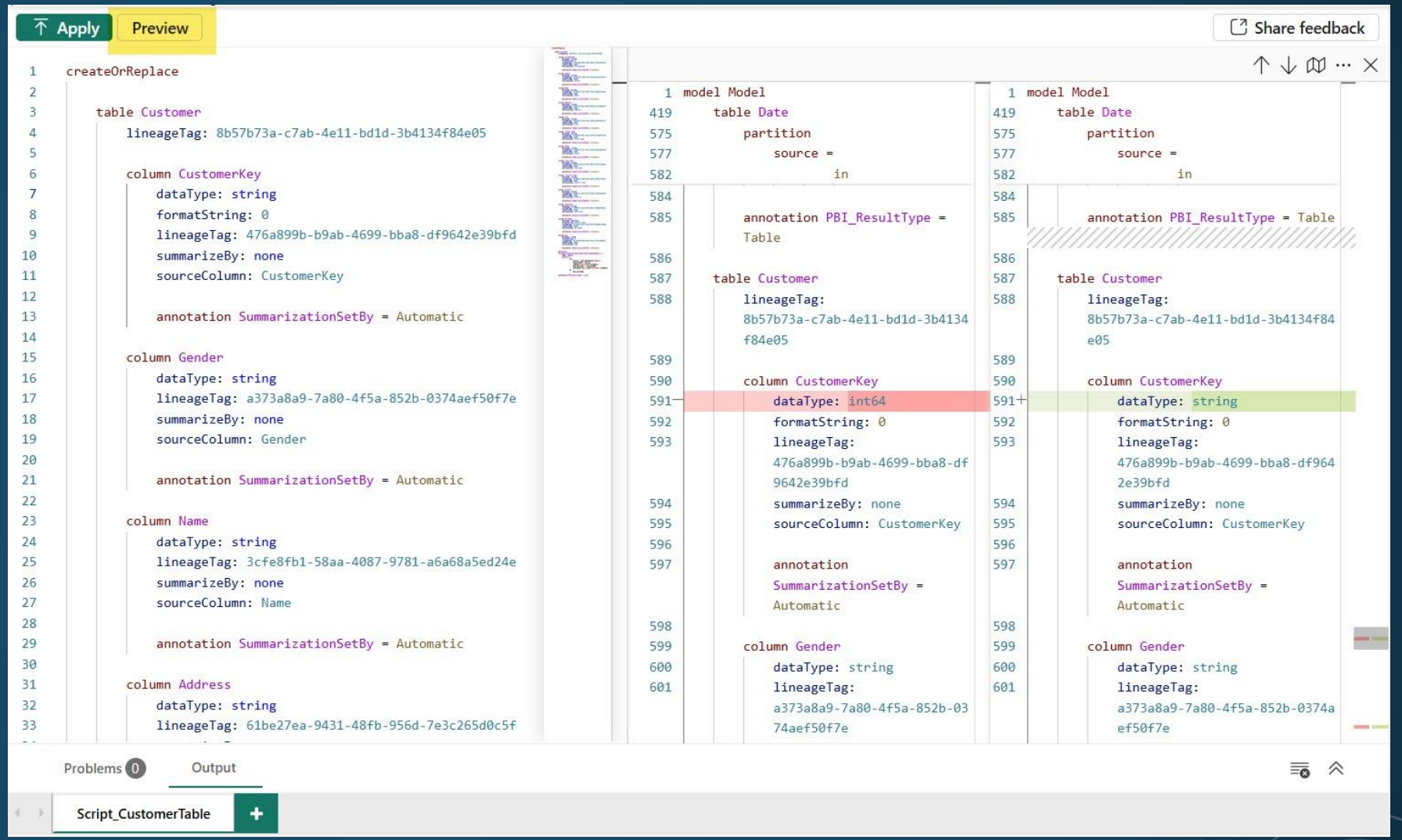
TMDL VIEW – SCRIPT TAB



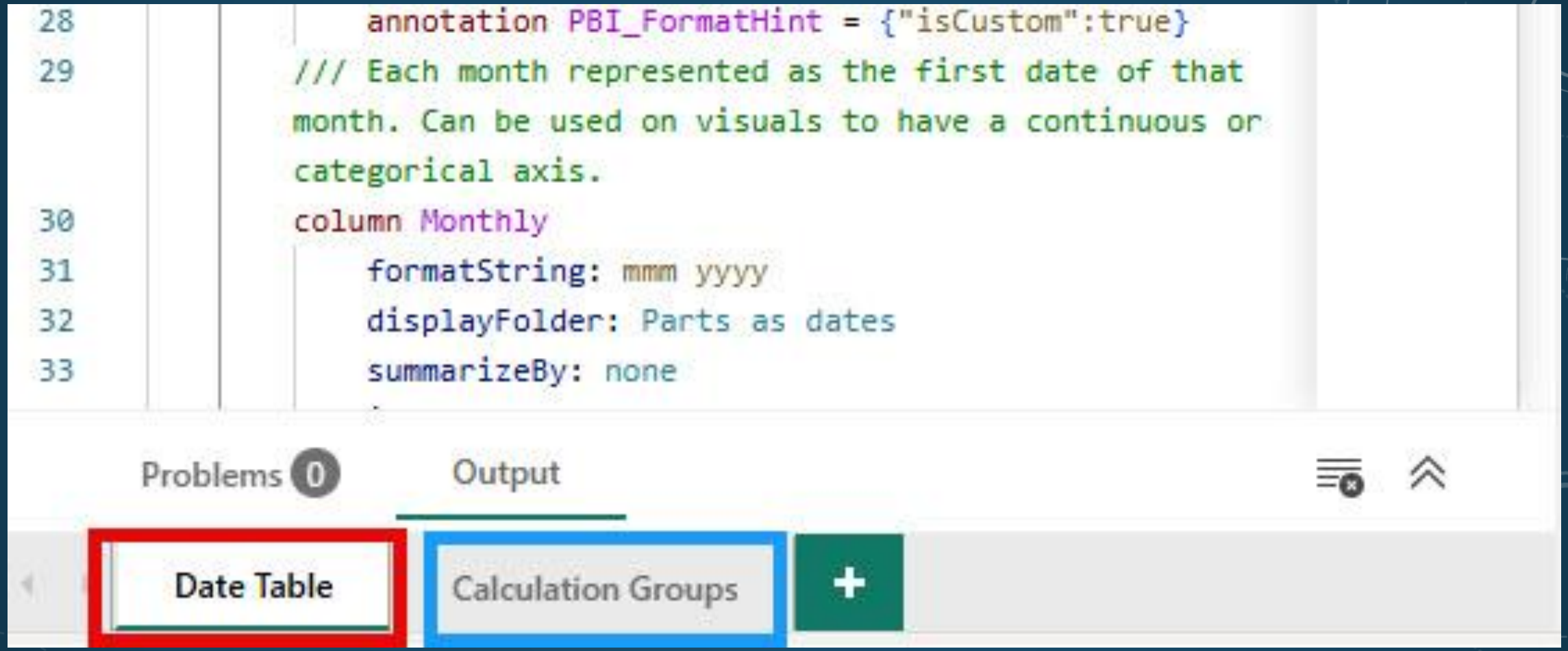
TMDL VIEW – CODE INTERFACE



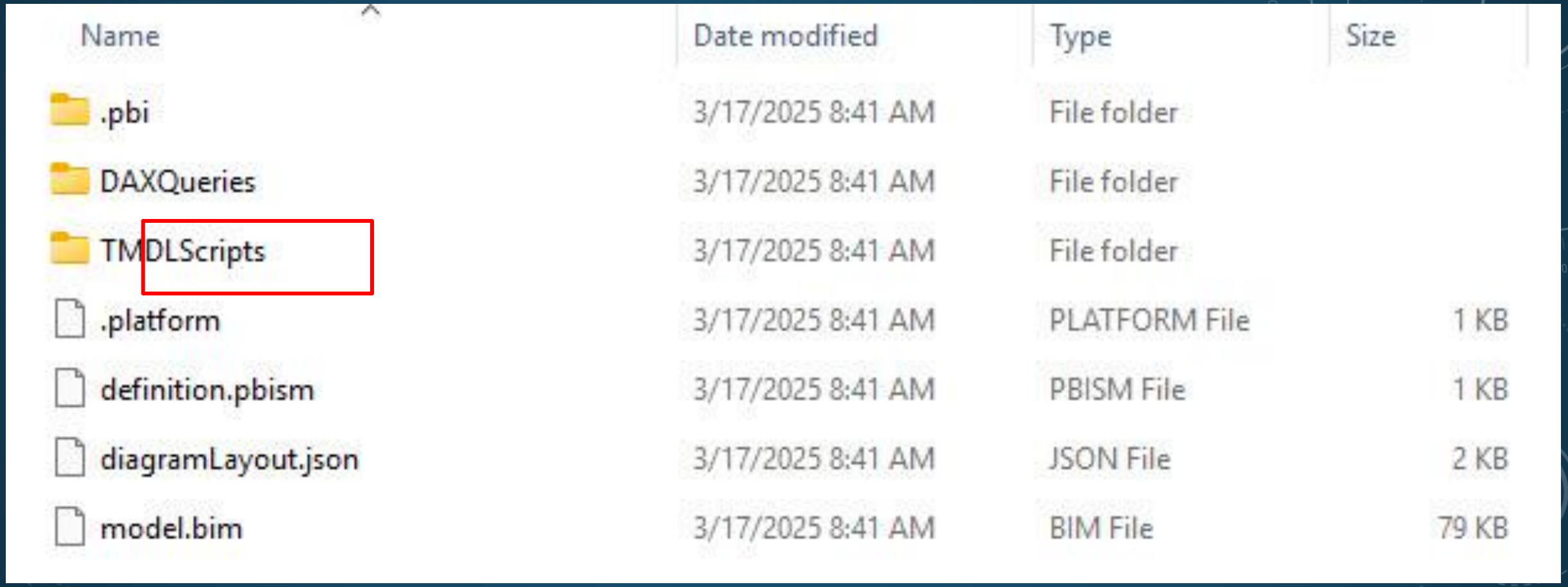
CODE INTERFACE - PREVIEW



TMDL VIEW – RENAME TABS



TMDL SCRIPTS – SAVED IN FILE (PBIP/PBIX)



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DAXQueries	3/17/2025 8:41 AM	File folder	
TMDLScripts	3/17/2025 8:41 AM	File folder	
.platform	3/17/2025 8:41 AM	PLATFORM File	1 KB
definition.pbism	3/17/2025 8:41 AM	PBISM File	1 KB
diagramLayout.json	3/17/2025 8:41 AM	JSON File	2 KB
model.bim	3/17/2025 8:41 AM	BIM File	79 KB

ENABLES FUNCTIONALITIES WITHOUT EXTERNAL TOOL

For example:

- Perspectives
- Translations

Share TMDL Scripts

- Centralized collection
  - SharePoint site or Teams
- Sites with TMDL samples
  - TMDL Gallery
  - FabSnippets
- Article in resources regarding security precautions

TMDL View Demo

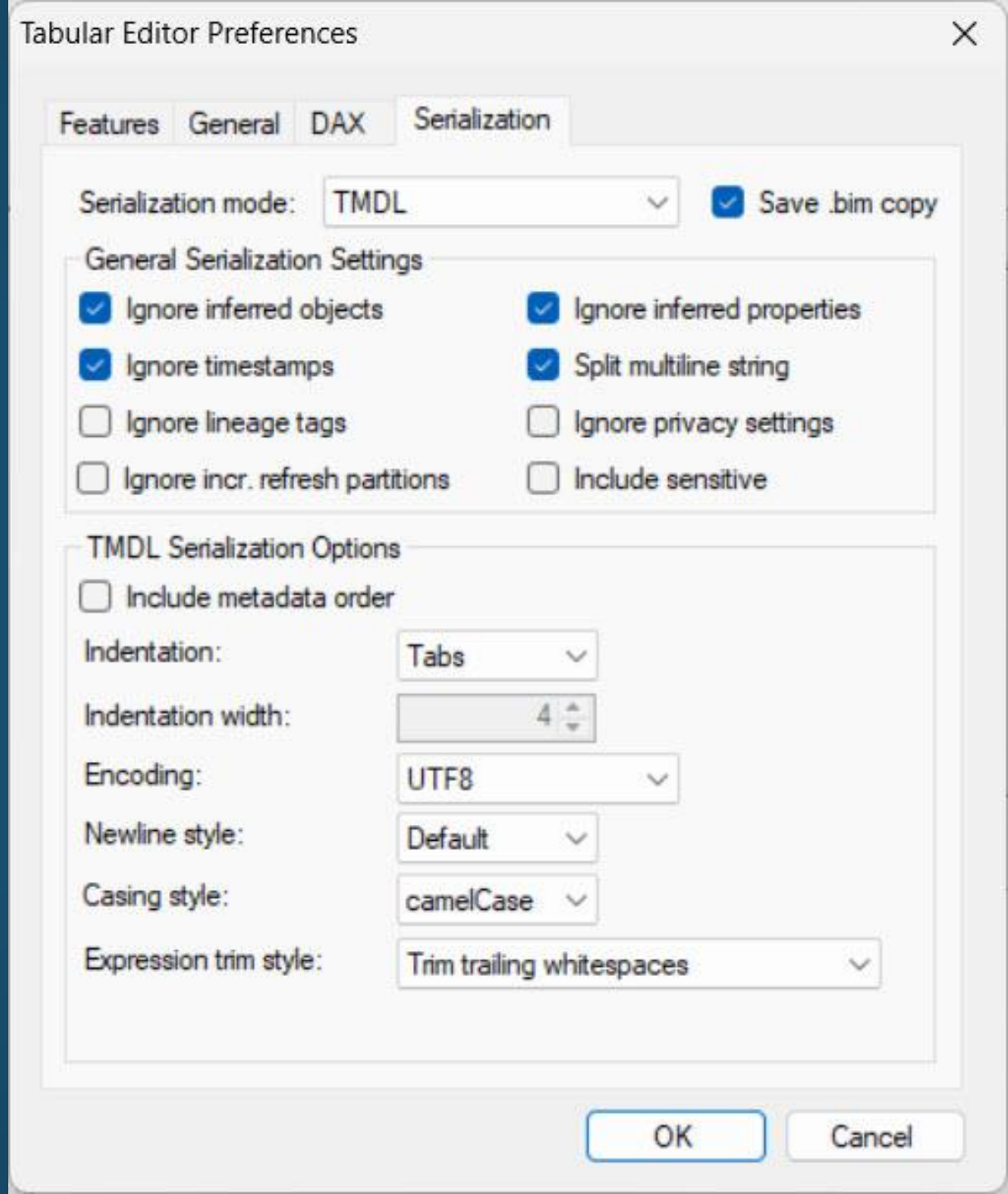
The TMDL Journey

1. What is TMDL
2. PBIP & TMDL
3. TMDL View
4. **External Tools**
5. Conclusion

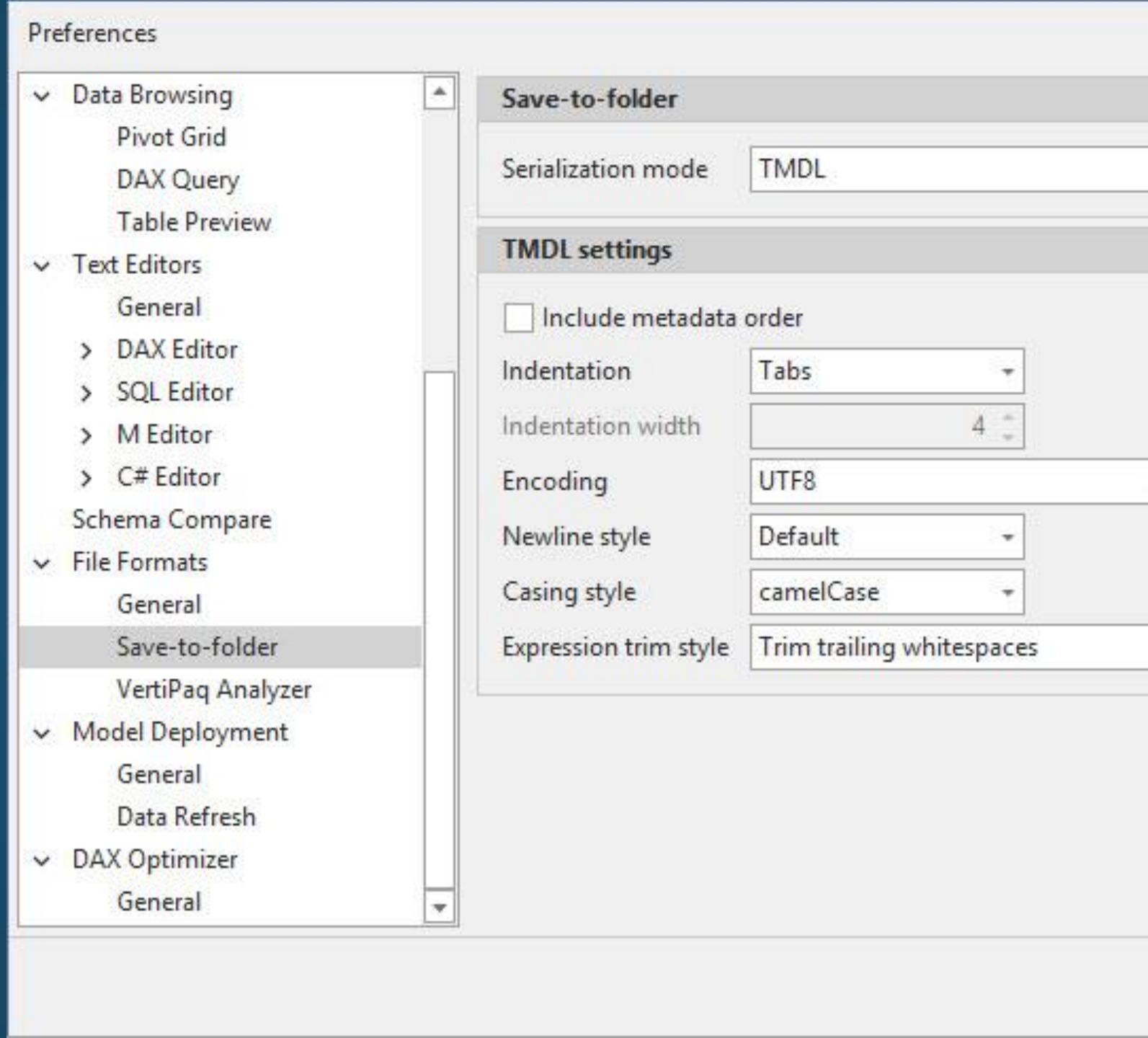
EXTERNAL TOOLS

- Visual Studio Code
  - TMDL Extension
  - Power BI Studio
- pbi-tools
- Tabular Editor

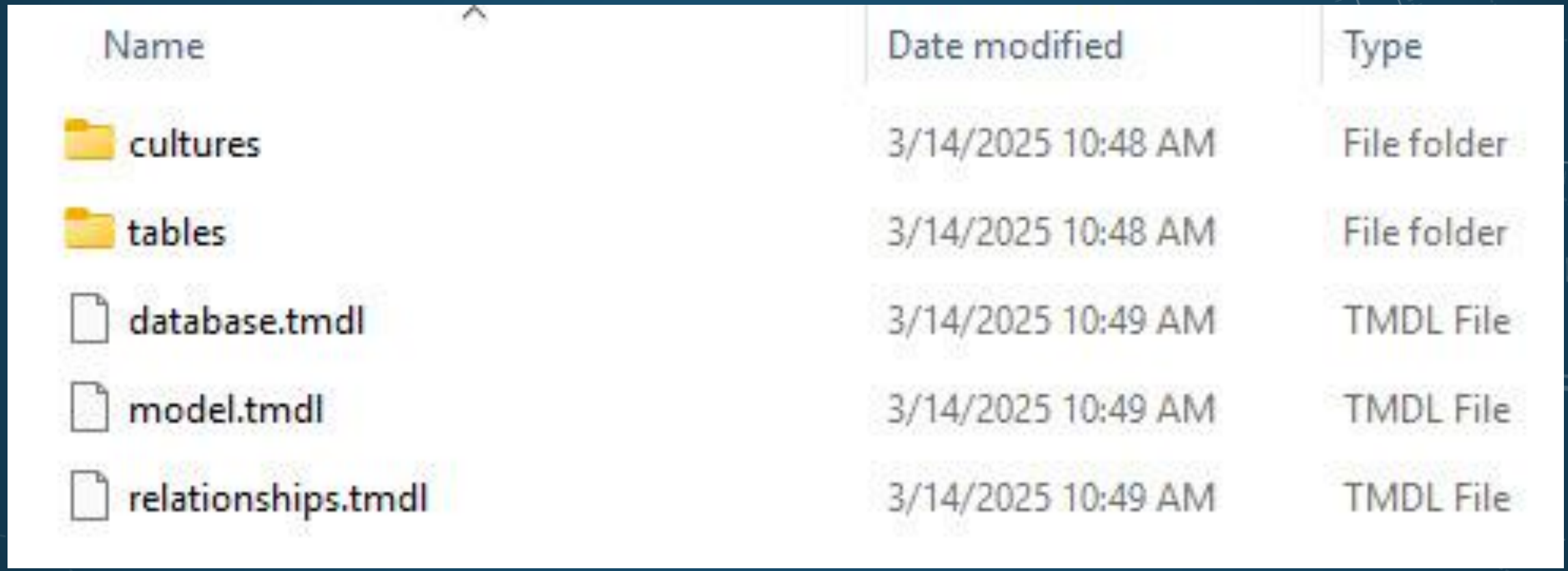
TABULAR EDITOR 2.X – SAVE TO FOLDER – TMDL



TABULAR EDITOR 3



TABULAR EDITOR 2 – SAVE TO FOLDER



Name	Date modified	Type
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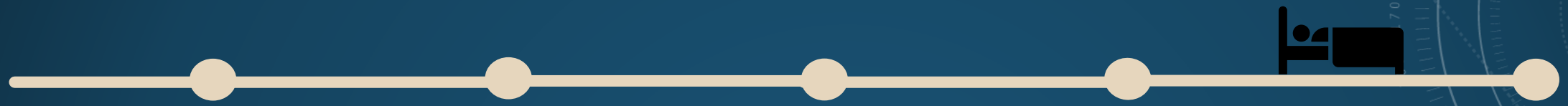
tables	3/14/2025 10:48 AM	File folder
database.tmdl	3/14/2025 10:49 AM	TMDL File
model.tmdl	3/14/2025 10:49 AM	TMDL File
relationships.tmdl	3/14/2025 10:49 AM	TMDL File

The TMDL Journey



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FUTURE EXPANSION

- Expanding support for changes that are not currently supported
- TMDL View available on the Web
- TMDL View Copilot

Reference:

https://powerbi.microsoft.com/en-us/blog/deep-dive-into-tmdl-view-for-power-bi-desktop-preview/

ENDLESS POSSIBILITIES

- Assist with Development
  - Reuse Modules
- Build Models with AI
- Best Practices

RESOURCES

- Microsoft TMDL Overview
  - **https://learn.microsoft.com/en-us/analysis-services/tmdl/tmdl-overview**
- Developer Mode
  - **https://learn.microsoft.com/en-us/power-bi/developer/projects/projects-dataset#tmdl-format**
- TMDL View
  - **https://learn.microsoft.com/en-us/power-bi/transform-model/desktop-tmdl-view**

RESOURCES

- Power BI TMDL View: Benefits, Security Risks and Best Practices by John Kerski
  - **https://www.red-gate.com/simple-talk/business-intelligence/power-bi-tmdl-benefits-security-risks-best-practices**
- FabSnippets
  - **https://fabsnippets.com**
- DataZoe – DAX Date table in TMDL
  - **https://www.datazoe.blog/post/dax-date-table-in-tmdl**

RESOURCES

- Deep dive into TMDL view for Power BI Desktop
  - **https://powerbi.microsoft.com/en-us/blog/deep-dive-into-tmdl-view-for-power-bi-desktop-preview/**
- Microsoft Lineage Tags
  - **https://learn.microsoft.com/en-us/analysis-services/tom/lineage-tags-for-power-bi-semantic-models**
- #SML (Saturday Morning Learning)
  - **www.smlcrew.com**

Hope you enjoyed your stay

Thank you

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https://thedaxshepherd.com/

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The Dax Shepherd