



UNLOCKING THE POWER OF TMDL: ENHANCING POWER BI DEVELOPMENT

Jason Romans

SQL Saturday St. Louis
October 2025



Jason Romans

Analytics Engineer

The DAX Shepherd



📍 Nashville, TN, USA

🔧 Began Career as a SQL Server DBA

➡ Transitioned to Microsoft BI Stack

📦 Data Engineering to Data Modeling

✍ Infrequent Blogger

🗺 Fan of Dimensional Models & Doctor Who



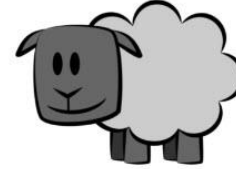
✕ @sql_jar

in jason-r-sql-jar

🔗 <https://thedaxshepherd.com/>

www.thedaxshepherd.com

SLIDES



The DAX Shepherd

Musings on the Microsoft BI Stack



[Home](#) [About Me](#) [Simple Talk](#) [Presentations](#) [A Speaker's Journey](#)

Presentations

Sessionize

This is my [Sessionize Profile](#) that has the conferences I have spoken at along with future events. It has a couple of my most popular sessions.

Presentation Slides

This is my [GitHub Repository](#) with the presentation slides for each event.

Recorded Sessions

Simple Talks Podcast | Episode 4 – Coffee chat with Jason Romans

About Jason Romans



I love working with the Microsoft BI Stack. I am passionate about learning.

[A Speaker's Journey](#)

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SHOULDERS OF GIANTS



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
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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

```
{ } model.bim X
Contoso10K - Copy.SemanticModel > { } model.bim > { } model > [ ] cultures > { } 0
3      "model": {
44      "relationships": [
112      }
113  ],
114  "sourceQueryCulture": "en-US",
115  "tables": [
116      {
117          "name": "Product",
118          "annotations": [
119              {
120                  "name": "PBI_ResultType",
121                  "value": "Table"
122              }
123          ],
124          "columns": [
125              {
126                  "name": "ProductKey",
127                  "annotations": [
128                      {
129                          "name": "SummarizationSetBy",
130                          "value": "Automatic"
131                      }
132                  ]
133              }
134          ]
135      }
136  ]
137  }
```

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

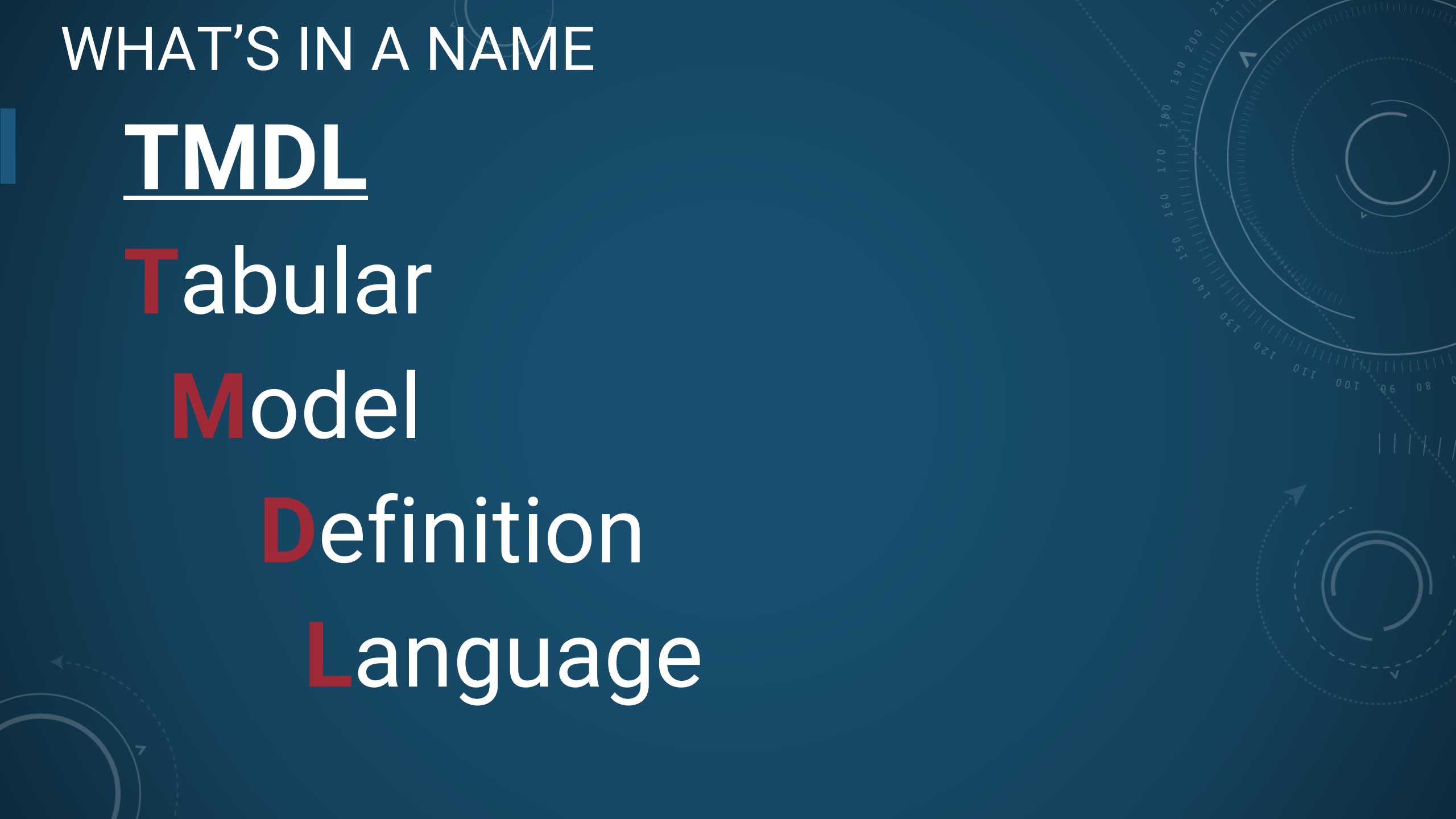
TMDL

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.



WWW.SMLCREW.COM

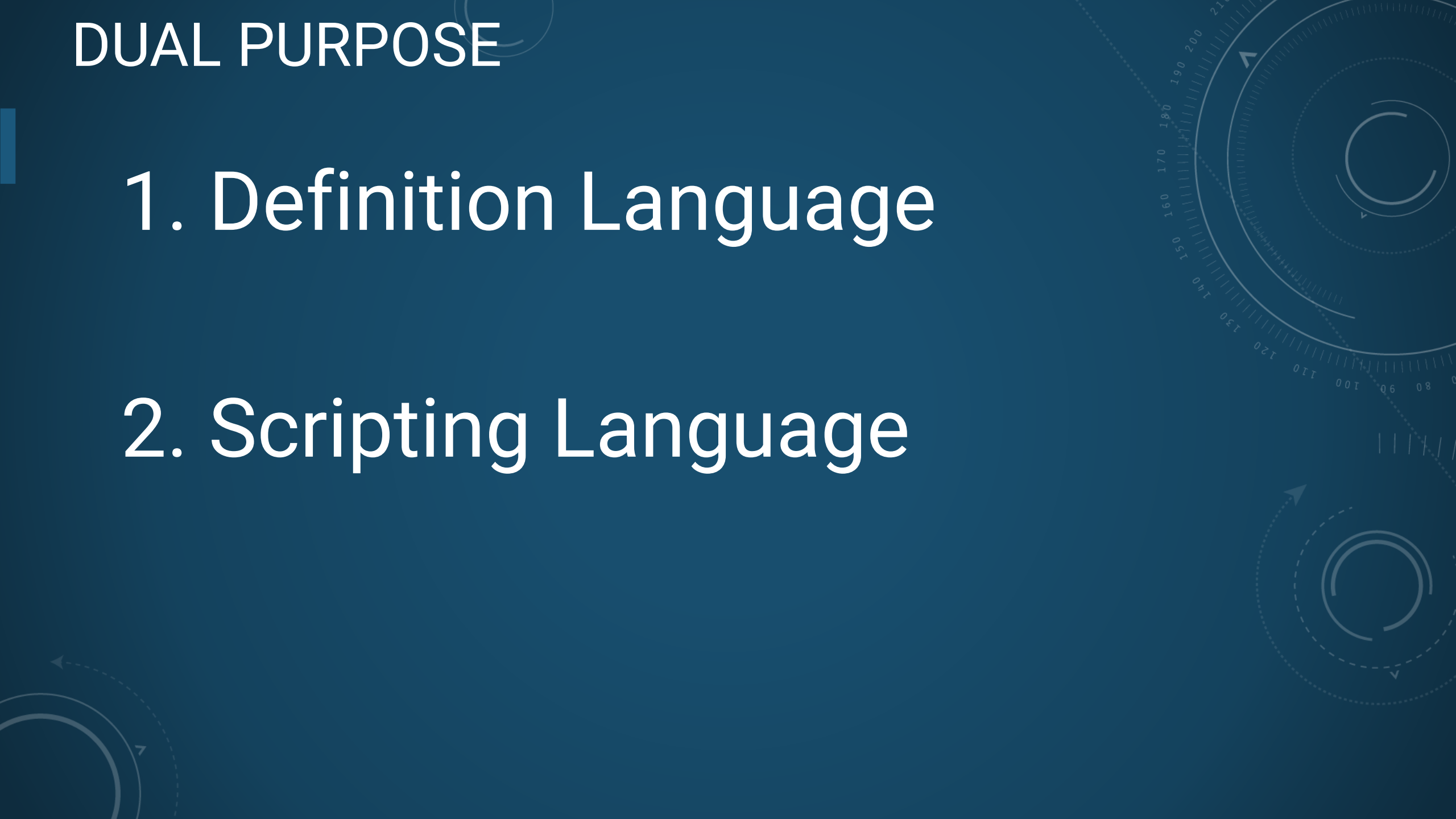
TMDL CREDIT

- 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

```
1 createOrReplace
```

```
2  
3 table Date
```

```
4 lineageTag: 093cc89d-ab2b-423e-9810-be9d879345e1
```

```
5  
6 column Date
```

```
7 dataType: dateTime
```

```
8 formatString: Long Date
```

```
9 lineageTag: 0bbfcfc4-20b3-48c4-b1d8-b3580bde1eee
```

```
10 summarizeBy: none
```

```
11 sourceColumn: Date
```

```
12  
13 annotation SummarizationSetBy = Automatic
```

```
14  
15 annotation UnderlyingDateTimeDataType = Date
```

```
16  
17 column Year
```

```
18 dataType: int64
```

```
19 formatString: 0
```

```
20 lineageTag: 7de18a58-8189-4a64-a8b9-9b278f40a9d2
```

```
21 summarizeBy: sum
```

```
22 sourceColumn: Year
```

```
23
```

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

BREAKING NEWS – READ ALL ABOUT IT


- September 2025 Power BI Released
 - TMDL View is GA
 - [Power BI September 2025 Feature Summary](#)

PREVIEW OPTIONS - POWER BI PROJECT

****PREVIEW: READ LIMITATIONS ****

- ☒ 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](#)
 - ☐ Store PBIX reports using enhanced metadata format (PBIR) [Learn more](#)

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](#)
- ☐ Store PBIX reports using enhanced metadata format (PBIR) [Learn more](#)

TMDL IN POWER BI DESKTOP

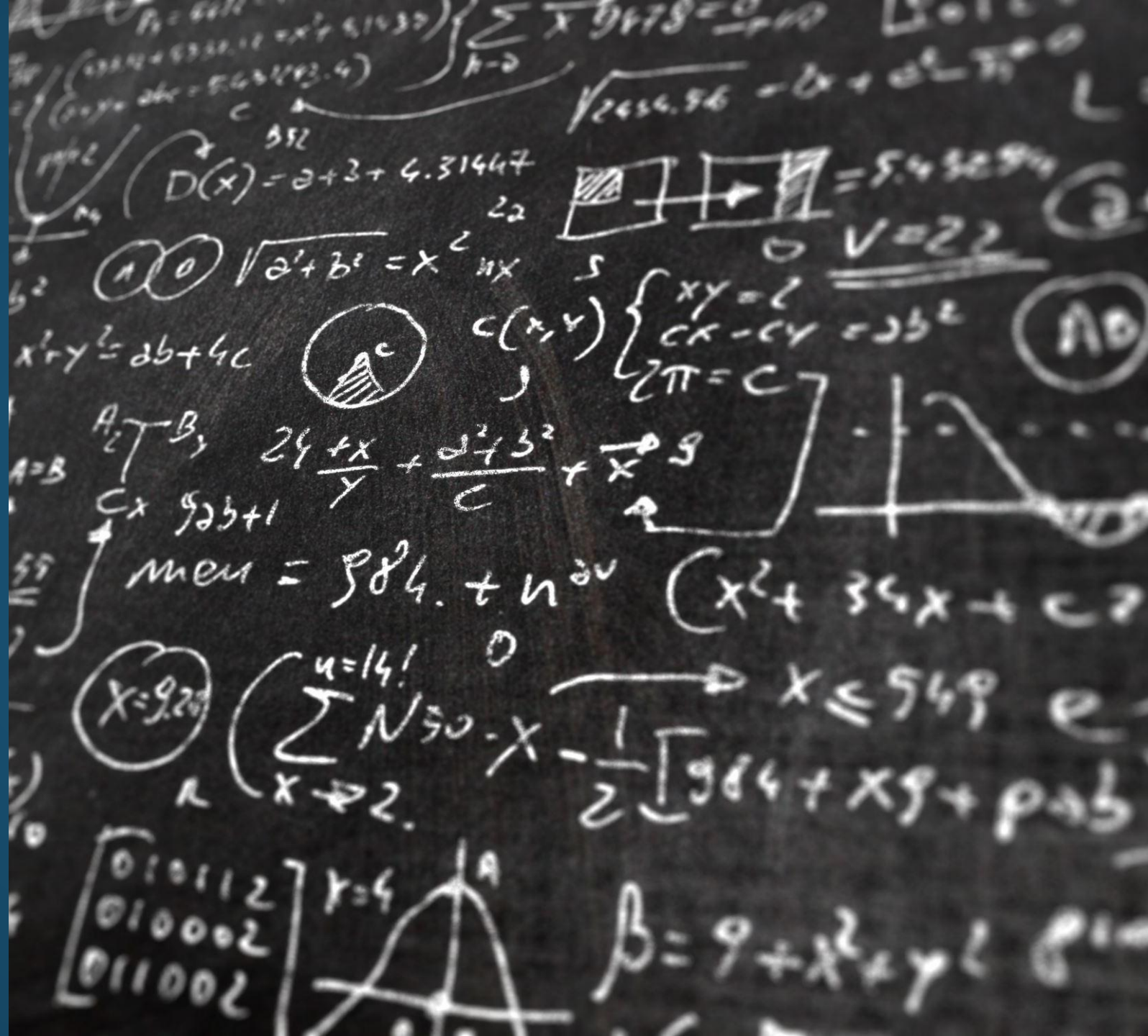
1. Power BI Project (.pbip)

- 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

Issues were found

There's a problem with the definition content in your Power BI Project.

TMDL Format Error:

Parsing error type - UnsupportedObjectType

Detailed error - Unsupported object type - 1model is not a supported property in the current context!

Document - './model'

Line Number - 2

Line - '1model Model'

[Copy details to clipboard](#)

Close

Git Changes

From PBIX to PBIP

GRAPH

Auto

Our Journey



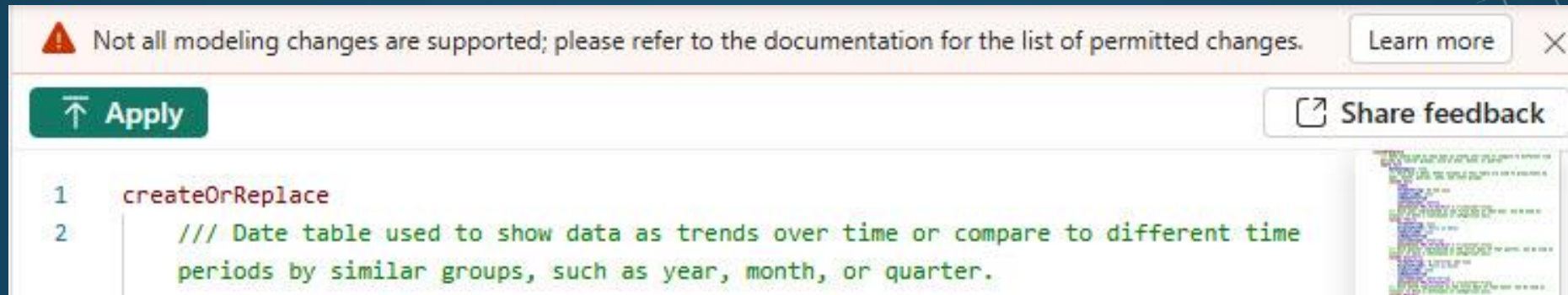
1. What is TMDL
2. PBIP & TMDL
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TMDL IN POWER BI DESKTOP

2.TMDL View

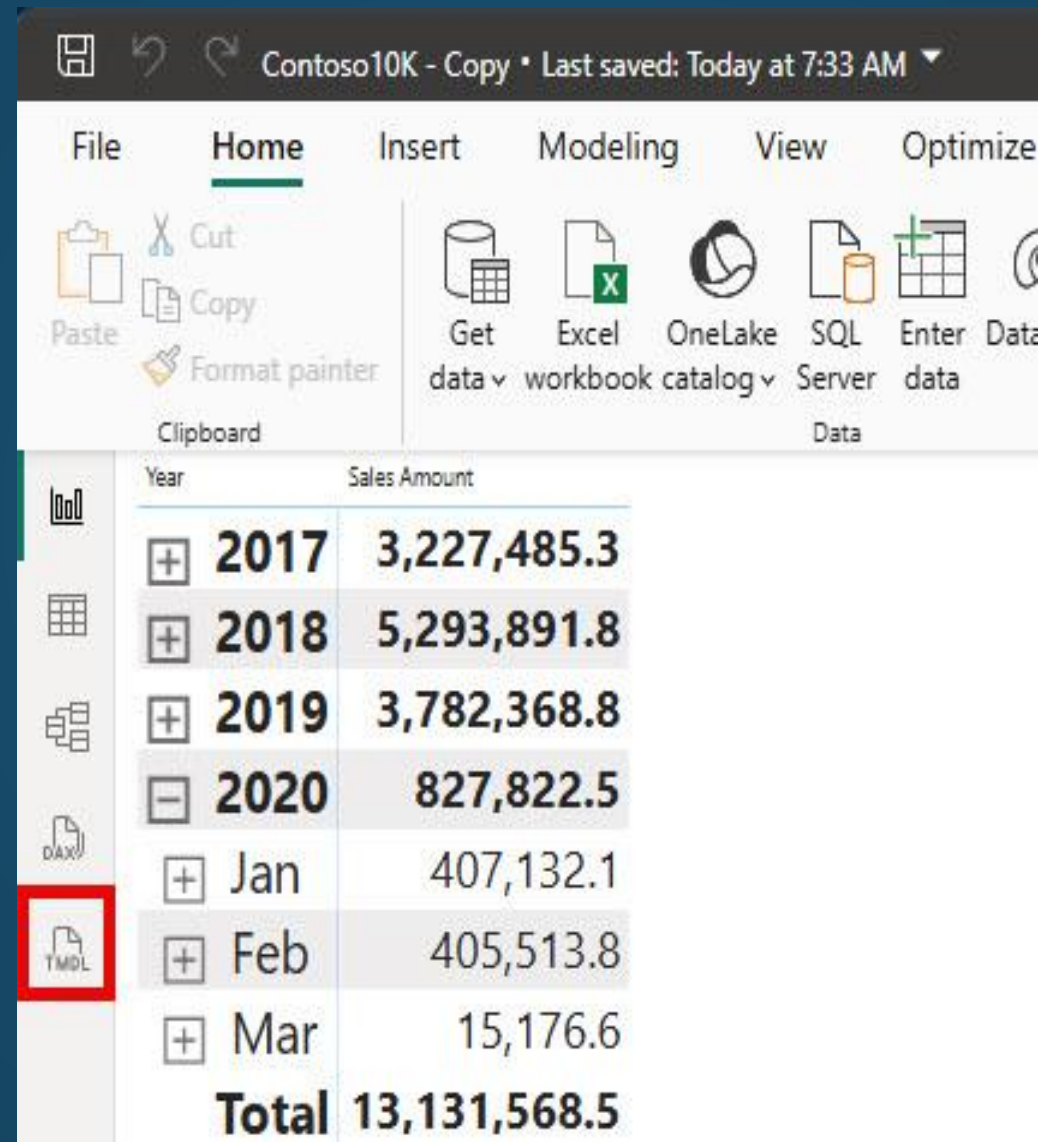
- Can be used with PBIX files

WARNING



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

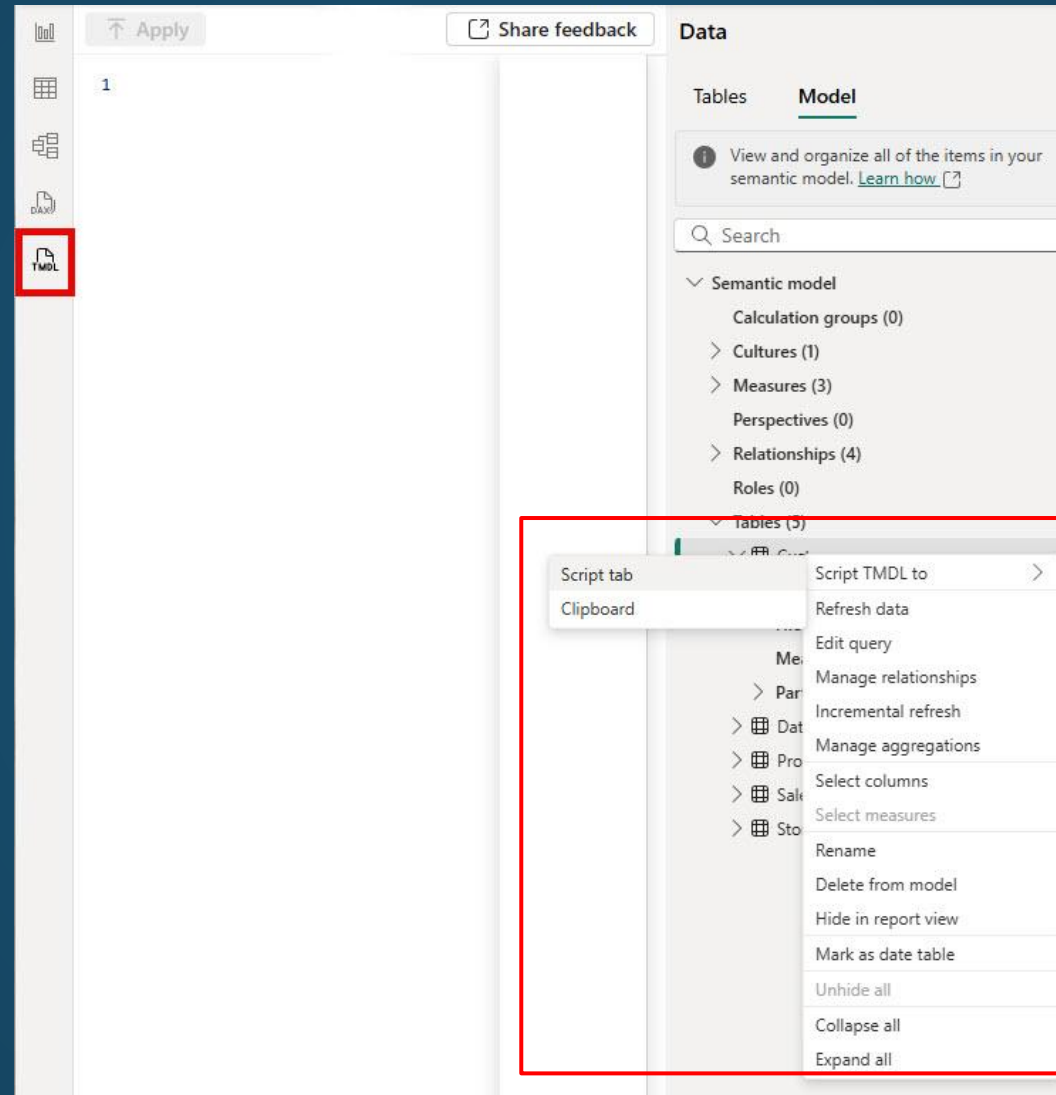
TMDL VIEW BUTTON



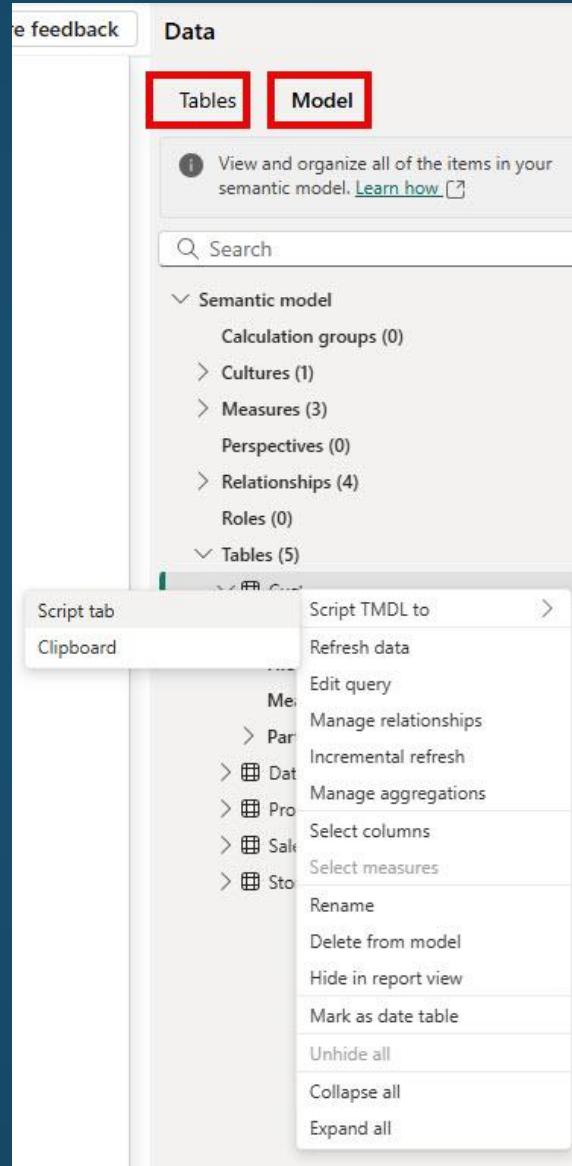
The screenshot displays the Microsoft Power BI Desktop application window. The title bar indicates the file is "Contoso10K - Copy" and it was last saved today at 7:33 AM. The ribbon at the top includes tabs for File, Home, Insert, Modeling, View, and Optimize. The Home tab is active, showing options for Clipboard (Paste, Cut, Copy, Format painter) and Data (Get data, Excel workbook, OneLake catalog, SQL Server, Enter data). On the left-hand navigation pane, the TMDL view button is highlighted with a red rectangle. The main area shows a table with sales data for the years 2017 through 2020, and a total row.

Year	Sales Amount
2017	3,227,485.3
2018	5,293,891.8
2019	3,782,368.8
2020	827,822.5
Jan	407,132.1
Feb	405,513.8
Mar	15,176.6
Total	13,131,568.5

SCRIPT TMDL

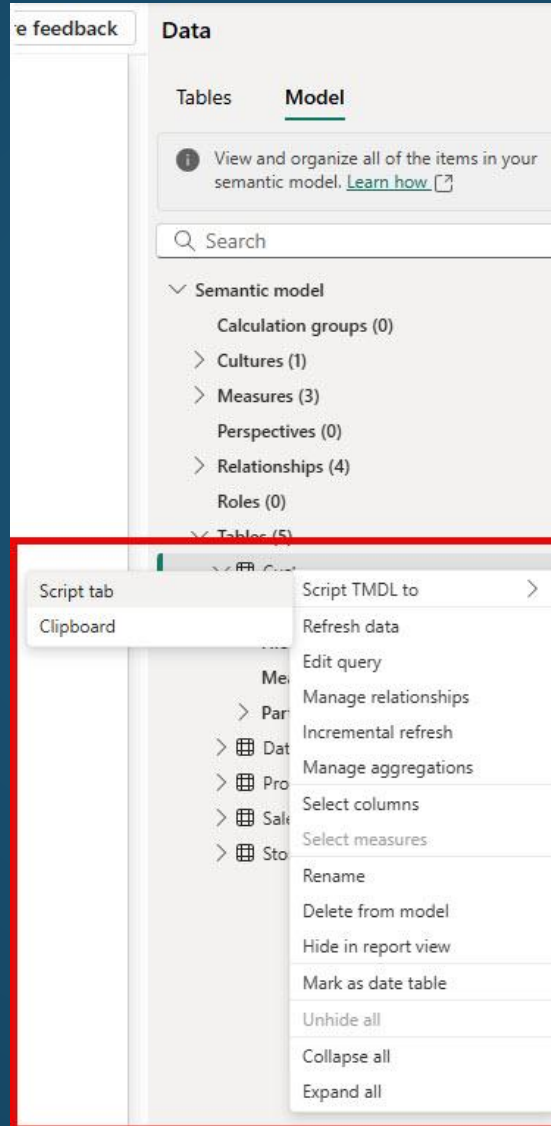


CAN BE IN TABLE OR MODEL SELECTION

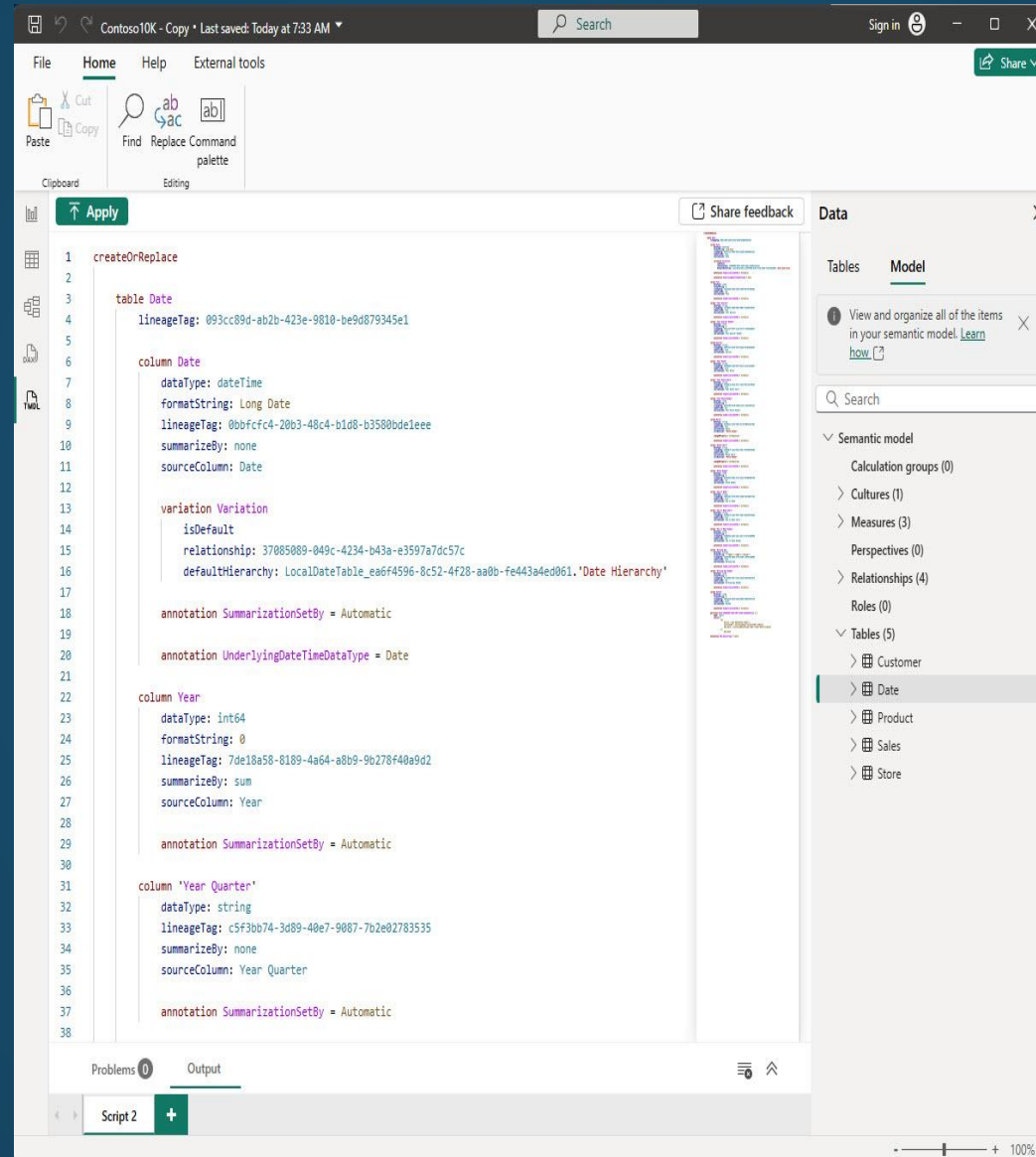


CAN SCRIPT TO SCRIPT TAB OR CLIPBOARD

**** ALSO DRAG AND DROP TO TAB ****



TMDL VIEW – SCRIPT TAB



TMDL VIEW – CODE INTERFACE

↑ Apply

Preview

🔗 Share feedback

```
1 createOrReplace
2
3     table Customer
4         lineageTag: 8b57b73a-c7ab-4e11-bd1d-3b4134f84e05
5
6         column CustomerKey
7             dataType: int64
8             formatString: 0
9             lineageTag: 476a899b-b9ab-4699-bba8-df9642e39bfd
10            summarizeBy: none
11            sourceColumn: CustomerKey
12
13            annotation SummarizationSetBy = Automatic
14
15        column Gender
16            dataType: string
17            lineageTag: a373a8a9-7a80-4f5a-852b-0374aef50f7e
18            summarizeBy: none
19            sourceColumn: Gender
20
21            annotation SummarizationSetBy = Automatic
22
23        column Name
24            dataType: string
25            lineageTag: 3cfe8fb1-58aa-4087-9781-a6a68a5ed24e
26            summarizeBy: none
27            sourceColumn: Name
28
29            annotation SummarizationSetBy = Automatic
30
31        column Address
```

Problems 0

Output

Script_CustomerTable +

CODE INTERFACE - PREVIEW

↑ Apply

Preview

Share feedback

↑ ↓ ↺ ... ✕

1 createOrReplace

2

3 table Customer

4 lineageTag: 8b57b73a-c7ab-4e11-bd1d-3b4134f84e05

5

6 column CustomerKey

7 dataType: string

8 formatString: 0

9 lineageTag: 476a899b-b9ab-4699-bba8-df9642e39bfd

10 summarizeBy: none

11 sourceColumn: CustomerKey

12

13 annotation SummarizationSetBy = Automatic

14

15

16 column Gender

17 dataType: string

18 lineageTag: a373a8a9-7a80-4f5a-852b-0374aef50f7e

19 summarizeBy: none

20 sourceColumn: Gender

21

22 annotation SummarizationSetBy = Automatic

23

24 column Name

25 dataType: string

26 lineageTag: 3cfe8fb1-58aa-4087-9781-a6a68a5ed24e

27 summarizeBy: none

28 sourceColumn: Name

29

30 annotation SummarizationSetBy = Automatic

31

32 column Address

33 dataType: string

34 lineageTag: 61be27ea-9431-48fb-956d-7e3c265d0c5f

35

1 model Model

419 table Date

575 partition

577 source =

582 in

584

585 annotation PBI_ResultType =

Table

586

587 table Customer

588 lineageTag:

8b57b73a-c7ab-4e11-bd1d-3b4134

f84e05

589

590 column CustomerKey

591 dataType: int64

592 formatString: 0

593 lineageTag:

476a899b-b9ab-4699-bba8-df

9642e39bfd

594 summarizeBy: none

595 sourceColumn: CustomerKey

596

597 annotation

SummarizationSetBy =

Automatic

598

599 column Gender

600 dataType: string

601 lineageTag:

a373a8a9-7a80-4f5a-852b-03

74aef50f7e

1 model Model

419 table Date

575 partition

577 source =

582 in

584

585 annotation PBI_ResultType = Table

586

587 table Customer

588 lineageTag:

8b57b73a-c7ab-4e11-bd1d-3b4134f84

e05

589

590 column CustomerKey

591+ dataType: string

592 formatString: 0

593 lineageTag:

476a899b-b9ab-4699-bba8-df964

2e39bfd

594 summarizeBy: none

595 sourceColumn: CustomerKey

596

597 annotation

SummarizationSetBy =

Automatic

598

599 column Gender

600 dataType: string

601 lineageTag:

a373a8a9-7a80-4f5a-852b-0374a

ef50f7e

Problems 0

Output

Script_CustomerTable

+








TMDL VIEW – RENAME TABS

```
28      annotation PBI_FormatHint = {"isCustom":true}
29      /// Each month represented as the first date of that
      month. Can be used on visuals to have a continuous or
      categorical axis.
30      column Monthly
31          formatString: mmm yyyy
32          displayFolder: Parts as dates
33          summarizeBy: none
```

Problems 0 Output

Date Table Calculation Groups +

TMDL SCRIPTS – SAVED IN FILE (PBIP/PBIX)

Name	Date modified	Type	Size
 .pbi	3/17/2025 8:41 AM	File folder	
 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

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EXTERNAL TOOLS

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



TABULAR EDITOR 2.X

– SAVE TO FOLDER –

TMDL

Tabular Editor Preferences

Features General DAX **Serialization**

Serialization mode: TMDL ☒ Save .bim copy

General Serialization Settings

- | | |
|---|--|
| <input checked="" type="checkbox"/> Ignore inferred objects | <input checked="" type="checkbox"/> Ignore inferred properties |
| <input checked="" type="checkbox"/> Ignore timestamps | <input checked="" type="checkbox"/> Split multiline string |
| <input type="checkbox"/> Ignore lineage tags | <input type="checkbox"/> Ignore privacy settings |
| <input type="checkbox"/> Ignore incr. refresh partitions | <input type="checkbox"/> Include sensitive |

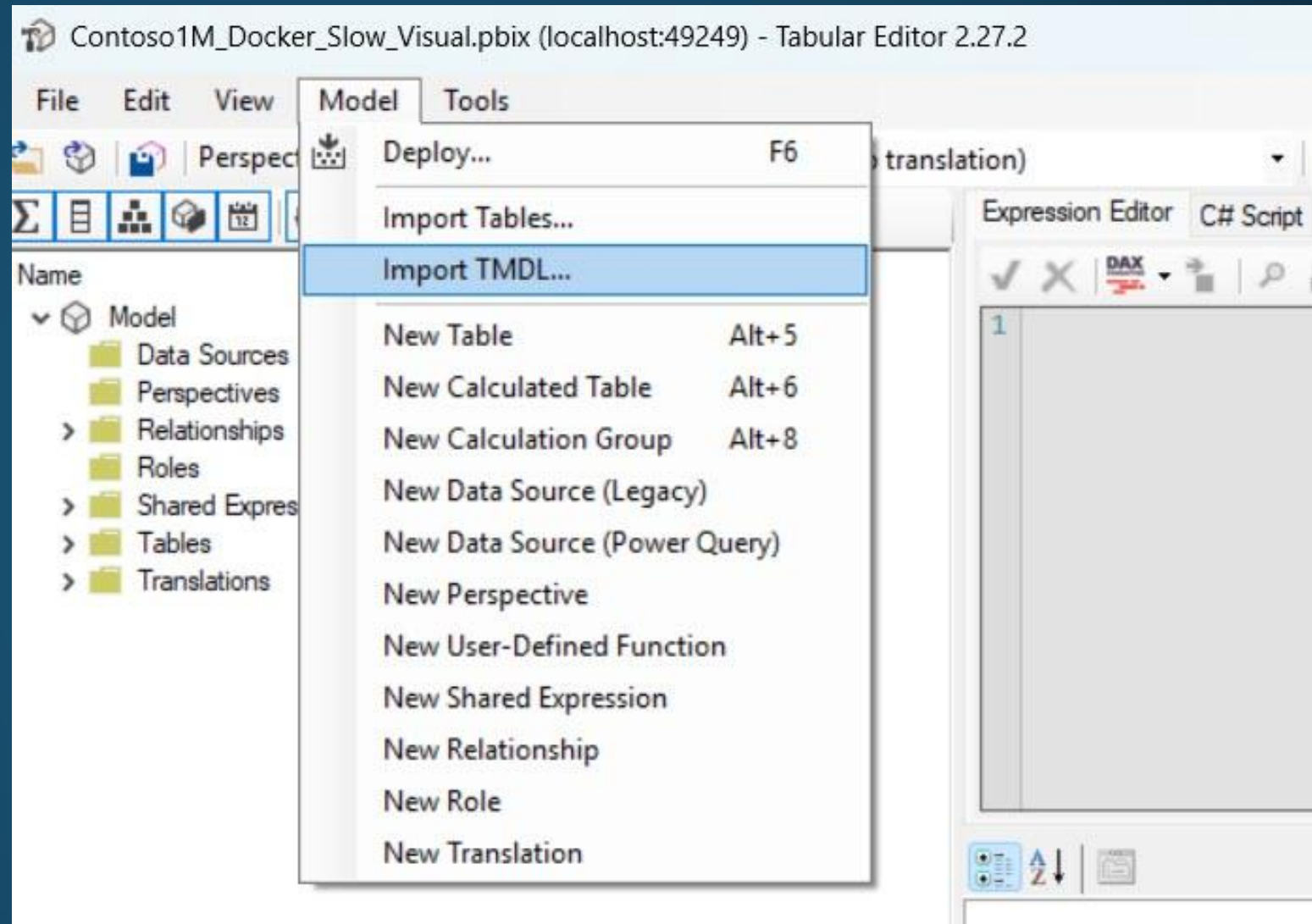
TMDL Serialization Options

- ☐ Include metadata order
- Indentation: Tabs
- Indentation width: 4
- Encoding: UTF8
- Newline style: Default
- Casing style: camelCase
- Expression trim style: Trim trailing whitespaces

OK

Cancel

TABULAR EDITOR 2.X – IMPORT TMDL



TABULAR EDITOR 3

Preferences

- ▼ Data Browsing
 - Pivot Grid
 - DAX Query
 - Table Preview
- ▼ Text Editors
 - General
 - > DAX Editor
 - > SQL Editor
 - > M Editor
 - > C# Editor
- Schema Compare
- ▼ File Formats
 - General
 - Save-to-folder**
 - VertiPaq Analyzer
- ▼ Model Deployment
 - General
 - Data Refresh
- ▼ DAX Optimizer
 - General

Save-to-folder

Serialization mode

TMDL settings

☐ Include metadata order

Indentation

Indentation width






Encoding

Newline style

Casing style

Expression trim style

TABULAR EDITOR 2 – SAVE TO FOLDER

Name	Date modified	Type
 cultures	3/14/2025 10:48 AM	File folder
 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

Jason Romans



thedaxshepherd@gmail.com



jason-r-sql-jar



<https://thedaxshepherd.com/>



@sql_jar



The Dax Shepherd



Unlocking the Power of TMDL: Enhancing Power BI
Development