

Power BI CICD

Where are we? Where are we going?

Riccardo Perico
BI & Power BI Engineer
Lucient Italia



Sponsors



About me

Riccardo Perico
Riccardo.perico@lucent.it



X @R1k91

in <https://www.linkedin.com/in/riccardo-perico/>

github.com/R1k91

medium.com/riccardo-perico

BI & Power BI Engineer
+10 years in Microsoft “Data Realm”
Giving my little contribution to the community

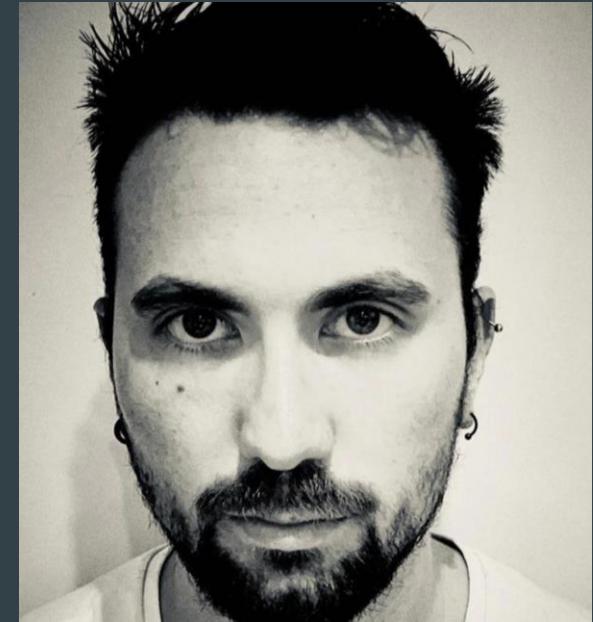


Power Platform
World Tour

PowerBIUG

DATA SATURDAYS

Dev>Marche



Microsoft®
Most Valuable
Professional



Microsoft®
CERTIFIED
PROFESSIONAL
MCSA
200-801: Microsoft
Windows Server
Administration



Microsoft®
CERTIFIED
PROFESSIONAL
POWER BI
DATA ANALYST
ASSOCIATE



Microsoft®
CERTIFIED
PROFESSIONAL
AZURE
ENTERPRISE
DATA ANALYST
ASSOCIATE





What?





Workaround

SuperTidyDeveloperTeam

Name	Date modified	Type
Contoso - v1.0.pbix	7/19/2023 3:43 PM	Microsoft Power B...
Contoso - v2.0.pbix	7/19/2023 3:43 PM	Microsoft Power B...
Contoso - v2.1.pbix	7/19/2023 3:43 PM	Microsoft Power B...
Contoso - v2.2.pbix	7/19/2023 3:43 PM	Microsoft Power B...



Porkaround

SuperTidyDeveloperTeam

Name	Date modified	Type
Contoso - v1.0.pbix	7/19/2023 3:43 PM	Microsoft Power B...
Contoso - v2.0.pbix	7/19/2023 3:43 PM	Microsoft Power B...
Contoso - v2.1.pbix	7/19/2023 3:43 PM	Microsoft Power B...
Contoso - v2.2.pbix	7/19/2023 3:43 PM	Microsoft Power B...



Come on... everyone has something like this

Name	Date modified
BCK Contoso - Not The real One - Copy.pbix	7/19/2023 3:43 PM
Contos - Test - Copy.pbix	7/19/2023 3:43 PM
Contos - Test.pbix	7/19/2023 3:43 PM
Contoso - Not The real One.pbix	7/19/2023 3:43 PM
Contoso - v1.0 - with bookmark.pbix	7/19/2023 3:43 PM
Contoso - v1.0 - without buttons or bookmarks.pbix	7/19/2023 3:43 PM
Contoso - v1.0 - without buttons.pbix	7/19/2023 3:43 PM
Contoso - v1.0.pbix	7/19/2023 3:43 PM
Contoso - v2.0.pbix	7/19/2023 3:43 PM
Contoso - v2.1.pbix	7/19/2023 3:43 PM
Contoso - v2.2 - backup - dont' touch.pbix	7/19/2023 3:43 PM
Contoso - v2.2 - backup - why don't touch.pbix	7/19/2023 3:43 PM
Contoso - v2.2 - backup.pbix	7/19/2023 3:43 PM
Contoso - v2.2 - Copy (2).pbix	7/19/2023 3:43 PM
Contoso - v2.2 - Copy (3).pbix	7/19/2023 3:43 PM
Contoso - v2.2 - Copy.pbix	7/19/2023 3:43 PM
Contoso - v2.2.pbix	7/19/2023 3:43 PM
Contoso - v3.0.pbix	7/19/2023 3:43 PM
Contoso - v4.0 - I made a new version because I don't know where to start!!!!.pbix	7/19/2023 3:43 PM



On Earth as it is in H...ell!

	Name	Type
📄	aaaa	Report
📊	HUB	Report
🗄️	HUB	Dataset
📊	HUB - wo geography	Report
🗄️	HUB - wo geography	Dataset
📊	WIP v1.2	Report
🗄️	WIP v1.2	Dataset
📊	WIP v1.3	Report
🗄️	WIP v1.3	Dataset
📊	WIP v1.3.1	Report
🗄️	WIP v1.3.1	Dataset



First aid: Onedrive

The screenshot shows a Microsoft OneDrive interface with a context menu open over a file named "Sales and returns.pbix". The menu items are:

- Open
- Preview
- Share
- Copy link
- Manage access
- Favorite
- Download
- Delete
- Move to
- Copy to
- Rename
- Automate
- Version history
- Details

The "Version history" item is highlighted with a red box.

File list:

Name	Modified By	File size	Sharing	Activity
Sales and returns.pbix	[User]	6.22 MB	Shared	You s
FY23 Sales and returns.docx	[User]	12.1 KB	Private	
FY23 sales .xlsx	[User]	7.90 KB	Private	

Power BI Desktop OneDrive and SharePoint integration

Article • 06/15/2023 • 2 contributors

In this article

- Enable sharing links to Power BI files in OneDrive and SharePoint
- How to enable Power BI Desktop and SharePoint integrations
- Open Power BI files stored in OneDrive and SharePoint
- Save Power BI files to OneDrive and SharePoint

Show 4 more

Work seamlessly in Power BI Desktop with the ability to open, save, and share files to OneDrive and SharePoint. These new capabilities help you with file versioning, collaborating with other authors, and ensuring your file is always available in the cloud.

Note

This is prerelease documentation and some capabilities may not be available in your tenant.

The screenshot shows the Power BI desktop application. On the left, the 'Open' menu is open, displaying options like 'My files', 'Recent', 'Quick access' (with a list of saved items), and 'More places...' which includes 'Business Analytics', 'Microsoft Power BI', 'Sales team', 'Power BI learn', 'Sales team west', 'Information Protection', 'Online Sales', and 'Sales team north'. Below this is a 'Feedback' button. At the bottom of the menu are 'About' and 'Sign out' options. To the right, a list of files in 'My files > Sales data > Sales and Returns' is shown, including 'Sales and returns Q3.pbix', 'Sales and returns Q2.pbix', and 'Sales and returns Q1.pbix'. The 'Sales and returns Q3' file is selected. The interface includes columns for 'Name', 'Modified', 'Modified By', 'File size', 'Sharing', and 'Activity'. A note at the bottom indicates 'You viewed this Mar 24'.

Enable sharing links to Power BI files in OneDrive and SharePoint



We're developers...
we want more...
and we want it now!





Two options as of now

- Microsoft: Power BI Desktop Developer Mode
- Microsoft+3rd party: Tabular Model Definition Language + External Tools



Demo PBIP pt. 1

Untitled - Power BI Desktop

File Home Insert Modeling View Optimize Help External tools

Cut Copy Format painter

Get data from workbook OneLake data hub Data SQL Server Enter Dataverse Recent sources Transform data New visual Text box More visuals

Clipboard

Visualizations

Add data fields here

Drill through

Cross-report

Keep all filters

Add drill-through fields here

Filters

Visualizations

Build visual

Queries

Insert

Calculations

Sensitivity

Share

Add

Import data from Excel

Import data from SQL Server

Paste data into a blank table

Try a sample dataset

Get data from another source →

Page 1 of 1

Page 1

141%

The screenshot displays the Microsoft Power BI Desktop application. The interface includes a top ribbon with tabs such as File, Home, Insert, Modeling, View, Optimize, Help, and External tools. Below the ribbon, there are several toolbars and panes. On the left, there's a 'Clipboard' section and a 'Data' section containing icons for Get data from workbook, OneLake data hub, Data, SQL Server, Enter Dataverse, and Recent sources. The central workspace is titled 'Add data to your report' and contains four main buttons: 'Import data from Excel' (with an Excel icon), 'Import data from SQL Server' (with a SQL icon), 'Paste data into a blank table' (with a clipboard icon), and 'Try a sample dataset' (with a cylinder icon). Below these buttons is a link 'Get data from another source →'. To the right of the workspace is a 'Visualizations' pane showing a library of various chart and report types, and a 'Filters' pane with various settings. At the bottom, there are navigation icons for back, forward, and search, along with a page number indicator 'Page 1 of 1' and a zoom level of '141%'. The overall theme is light blue and white.

Contoso • Last saved: 8/3/2023 at 11:51 AM

File Home Insert Modeling View Optimize Help External tools

Cut Copy Format painter Paste

Clipboard

Get data workbook OneLake data hub SQL Server Enter data Recent sources Transform Refresh data New visual Text box More visual Calculations Sensitivity Quick measure Sensitivity Publish

Clipboard

ChannelName

Catalog Online Reseller Store

Filters

Search

Add data fields here

Filters on all pages

Add data fields here

Values

Add data fields here

Drill through

Cross-report

Keep all filters

Add drill-through fields here

Visualizations

Build visual

Calendar Channel Geography Product ProductCategory ProductSubcategory Promotion Sales Stores

Data

Search

Page 1 +

100% 1:47 PM 11/22/2023

Powered by Innovation

Icons for various tools and features:

- File
- Edit
- Selection
- View
- Go
- Run
- Terminal
- Help
- Search
- Open File
- Open Folder
- Open Recent
- Open Git Repository
- Connect to...
- Get Started with VS Code
- Learn the Fundamentals
- Get Started with PowerShell
- Show welcome page on startup

Visual Studio Code

Editing evolved

Start

- New File...
- Open File...
- Open Folder...
- Clone Git Repository...
- Connect to...

Recent

- PBIP C:\temp
- Lucient - Power BI CI/CD C:\Work\DevOps
- .git C:\Work\DevOps\Lucient - Power BI CI/CD
- trash C:\Work\DevOps
- TMDL C:\temp

Walkthroughs

- Get Started with VS Code
Discover the best customizations to make VS Code yours.

- Learn the Fundamentals

- Get Started with PowerShell Updated

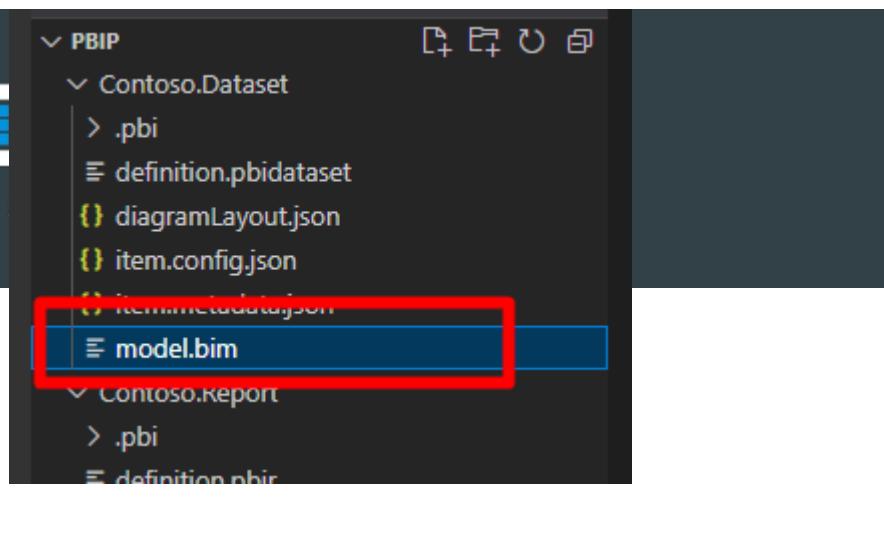
More...

Show welcome page on startup

Icons for various tools and features:

- File
- Edit
- Selection
- View
- Go
- Run
- Terminal
- Help
- Search
- Open File
- Open Folder
- Open Recent
- Open Git Repository
- Connect to...
- Get Started with VS Code
- Learn the Fundamentals
- Get Started with PowerShell
- Show welcome page on startup

1:54 PM
11/22/2023



```
{
  "compatibilityLevel": 1550,
  "model": {
    "annotations": [
      {
        "name": "__PBI_TimeIntelligenceEnabled",
        "value": "1"
      },
      {
        "name": "PBIDesktopVersion",
        "value": "2.123.742.0 (23.11)"
      },
      {
        "name": "PBI_QueryOrder",
        "value": "[\"Channel\", \"Sales\", \"Stores\", \"Promotion\", \"Product\"]"
      },
      {
        "name": "PBI_ProTooling",
        "value": "[\"DevMode\"]"
      }
    ],
    "culture": "en-US",
    "cultures": [
      {
        "name": "en-US",
        "linguisticMetadata": {
          "content": {
            "DynamicImprovement": "HighConfidence",
            "Language": "en-US",
            "Version": "1.0.0"
          },
          "contentType": "json"
        }
      }
    ],
    "dataAccessOptions": {
      "legacyRedirects": true,
      "returnErrorValuesAsNull": true
    },
    "defaultPowerBITDataSourceVersion": "powerBI_V3",
    "relationships": [
      {
        "name": "4f81913b-9717-434b-944d-0fe871897062",
        "crossFilteringBehavior": "bothDirections",
        "fromColumn": "PromotionKey",
        "fromTable": "Sales",
        "toColumn": "PromotionKey",
        "toTable": "Promotion"
      },
      {
        "name": "d219834a-6b75-4cb0-83c0-1e0a2a2a2a2a",
        "crossFilteringBehavior": "bothDirections",
        "fromColumn": "GeographyKey",
        "fromTable": "Stores",
        "toColumn": "GeographyKey",
        "toTable": "Geography"
      }
    ],
    "let",
    "Source = Access.Database(File.Contents(\"C:\\\\Users\\\\owend\\\\Documents\\\\ContosoSalesV31_64bit.accdb\")),"
    "_FactSales = Source[[Schema=\"\", Item=\"FactSales\"]][Data]",
    "#\"Removed Columns\" = Table.RemoveColumns(_FactSales,{\"CurrencyKey\", \"ETLLoadID\", \"LoadDate\", \"UpdateDate\"})",
    "in",
    "    #\"Removed Columns\""
  ],
  "type": "m"
}
```

```
"columns": [
  {
    "name": "Channel",
    "annotations": [
      {
        "name": "SummarizationSetBy",
        "value": "Automatic"
      }
    ],
    "dataType": "int64",
    "formatString": "0",
    "isHidden": true,
    "lineageTag": "8cb0c47f-bda0-47c5-8d4f-35b1a1a1acfc",
    "sourceColumn": "Channel",
    "summarizeBy": "none"
  },
  {
    "name": "ChannelName",
    "annotations": [
      {
        "name": "SummarizationSetBy",
        "value": "Automatic"
      }
    ],
    "dataType": "string",
    "lineageTag": "bfa7d98d-f9c0-4aa6-80c0-937003093555",
    "sourceColumn": "ChannelName",
    "summarizeBy": "none"
  }
]
```

```
"measures": [
  {
    "name": "Sales",
    "annotations": [
      {
        "name": "PBI_FormatHint",
        "value": "{\"currencyCulture\":\"en-US\"}"
      }
    ],
    "expression": "sum(Sales[SalesAmount])",
    "formatString": "\u20a3#,###,###,##0.###;(\u20a3#,###,###,##0.###);##",
    "lineageTag": "d5bcc404-e414-4faa-8f24-fa7c3b11b43d"
  }
]
```



A matter of size

Contoso.pbix	8/3/2023 11:51 AM	Microsoft Power B...	49,672 KB
--------------	-------------------	----------------------	-----------

Name	Date modified	Type	Size
Contoso.Dataset	11/22/2023 1:47 PM	File folder	
Contoso.Report	11/22/2023 1:47 PM	File folder	
.gitignore	11/22/2023 1:47 PM	Text Document	1 KB
Contoso.pbip	11/22/2023 1:47 PM	Microsoft Power B...	1 KB



Cache.abf

model.bim	11/22/2023 1:47 PM	BIM File	80 KB
-----------	--------------------	----------	-------

Local Disk (C:) > temp > PBIP > Contoso.Dataset > .pbi

Name	Date modified	Type	Size
cache.abf	11/22/2023 1:47 PM	ABF File	49,668 KB
editorSettings.json	11/22/2023 1:47 PM	JSON Source File	1 KB
localSettings.json	11/22/2023 1:47 PM	JSON Source File	1 KB

Local Disk (C:) > temp > PBIP >

Name	Date modified	Type	Size
Contoso.Dataset	11/22/2023 1:47 PM	File folder	
Contoso.Report	11/22/2023 1:47 PM	File folder	
.gitignore	11/22/2023 1:47 PM	Text Document	1 KB
Contoso.pbip	11/22/2023 1:47 PM	Microsoft Power B...	1 KB

```
❶ .gitignore X  
❷ .gitignore  
1  ** / .pbi/localSettings.json  
2  ** / .pbi/cache.abf
```

Azure DevOps ONE4-BI / Lucient - Power BI CICD / Repos / Files / Lucient - Power BI CICD

Search RP

Lucient - Power BI CICD

- Overview
- Boards
- Repos**
- Files
- Commits
- Pushes
- Branches
- Tags
- Pull requests
- Advanced Security
- Pipelines
- Test Plans
- Artifacts

Project settings

Lucient - Power BI CICD

- > PBIP
- > PBITools
- M README.md

main-rperico-wp2023 / Type to find a file or folder...

Files

Contents History

You updated main-rperico-wp2023 44m ago Create a pull request

Name ↑	Last change	Commits
PBIP	44m ago	ac03238e f1 done R1k91
PBITools	Jul 17	3219d6a0 PBITools - added model report R1k91
README.md	Jul 17	3219d6a0 PBITools - added model report R1k91

Introduction

This is an internal project to study and test power bi CICD.

PBIP

Software Requirements on Development Environment (once)

- vscode
- git
- pbi desktop

Repository and project creation (once)

- Create a brand new project in Azure DevOps
- Create a git repo in it
- Clone it locally
- Add 2 folders:
 - Models
 - Reports

Follow this link for detailed steps: <https://learn.microsoft.com/en-us/power-bi/developer/projects/projects-azdo#create-a-git-repo-in-azure-devops>

Development process

Thin report

Add a report to source control

Azure DevOps - trash - Repos + https://dev.azure.com/ONE4-BI/Lucent%20-%20Power%20BI%20CI/.../git/trash

Azure DevOps ONE4-BI / Lucent - Power BI CI / Repos / Files / trash

Search RP

Lucient - Power BI CI / trash / main / Type to find a file or folder...

Files

Contents History

Name ↑ Last change Commits

M README.md 8m ago f7a60d8e Added README.md Riccardo Perico

Set up build Clone

Introduction

TODO: Give a short introduction of your project. Let this section explain the objectives or the motivation behind this project.

Getting Started

TODO: Guide users through getting your code up and running on their own system. In this section you can talk about:

1. Installation process
2. Software dependencies
3. Latest releases
4. API references

Build and Test

TODO: Describe and show how to build your code and run the tests.

Contribute

TODO: Explain how other users and developers can contribute to make your code better.

If you want to learn more about creating good readme files then refer the following guidelines. You can also seek inspiration from the below readme files:

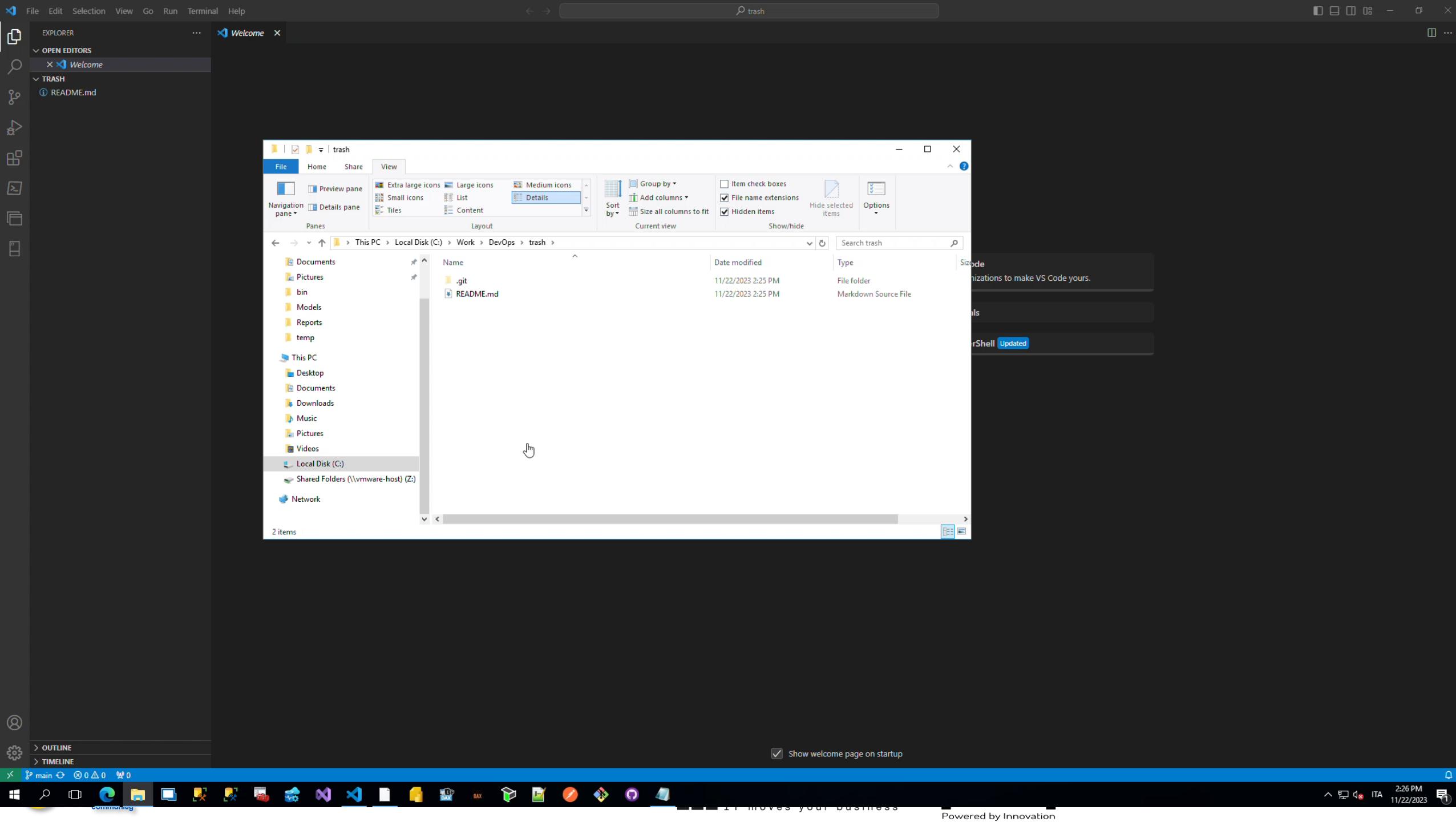
- ASP.NET Core
- Visual Studio Code
- Chakra Core

Untitled - Notepad

Project settings

Powered by Innovation

2:24 PM 11/22/2023





Visual Studio Code

Editing evolved

Start

- New File...
- Open File...
- Open Folder...
- Clone Git Repository...
- Connect to...

Recent

- PBIP C:\temp
 - Lucient - Power BI CI/CD C:\Work\DevOps
 - .git C:\Work\DevOps\Lucient - Power BI CI/CD
 - TMDL C:\temp
 - tmdl C:\Users\rperico\Desktop
- More...

Walkthroughs

- Get Started with VS Code
Discover the best customizations to make VS Code yours.
- Learn the Fundamentals
- Get Started with PowerShell Updated

More...

Show welcome page on startup



SOURCE CONTROL



Message (Ctrl+Enter to commit on "mai...")

✓ Commit

Show All Commands Ctrl + Shift + PGo to File Ctrl + PFind in Files Ctrl + Shift + FToggle Full Screen F11Show Settings Ctrl + ,

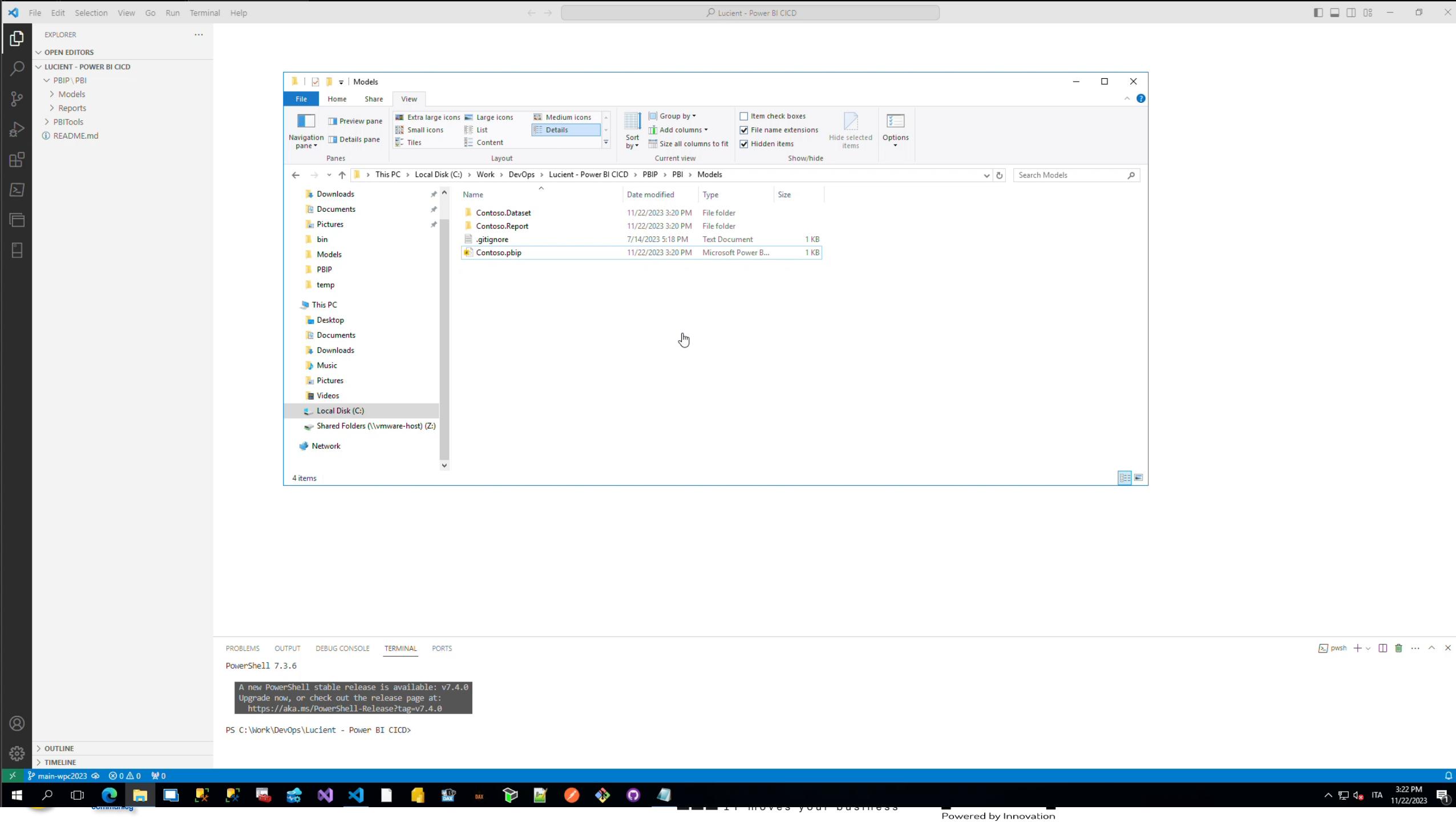
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PowerShell 7.3.6

A new PowerShell stable release is available: v7.4.0
Upgrade now, or check out the release page at:
<https://aka.ms/PowerShell-Release?tag=v7.4.0>

PS C:\Work\DevOps\Lucient - Power BI CICD>

pwsh + □ ✖ ... ^ ×



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

Cut Copy Paste Format painter Clipboard

Get data from Excel workbook OneLake data hub SQL Server Data Enter Data Refresh recent sources Transform data New visual Text box Insert More visuals New measure Quick measure Calculations Sensitivity Share Publish

Filters

Search

Filters on this visual

- BrandName is (All)
- ProductName is (All)
- Sales 1 is (All)

Add data fields here

Filters on this page

Add data fields here

Filters on all pages

Add data fields here

Drill through

Cross-report Off

Keep all filters On

Add drill-through fields here

Visualizations

Build visual

Calendar Channel Geography Product ProductCategory ProductSubcategory Promotion Sales

- Sales
 - DiscountAmount
 - DiscountQuantity
 - ReturnAmount
 - ReturnQuantity
 - Sales 1
 - Sales 2
 - Sales 3
 - Sales 4
 - SalesAmount
 - SalesQuantity
 - TotalCost
 - UnitCost
 - UnitPrice

Data

Search

Stores

BrandName	ProductName	Sales 1
A. Datum	A. Datum Advanced Digital Camera M300 Azure	\$3,523,146.055
A. Datum	A. Datum Advanced Digital Camera M300 Black	\$4,103,237.84
A. Datum	A. Datum Advanced Digital Camera M300 Green	\$4,140,721.065
A. Datum	A. Datum Advanced Digital Camera M300 Grey	\$3,818,974.185
A. Datum	A. Datum Advanced Digital Camera M300 Orange	\$4,220,782.67
A. Datum	A. Datum Advanced Digital Camera M300 Pink	\$3,950,407.695
A. Datum	A. Datum Advanced Digital Camera M300 Silver	\$3,808,853.62
A. Datum	A. Datum All in One Digital Camera M200 Azure	\$681,398.52
A. Datum	A. Datum All in One Digital Camera M200 Black	\$4,037,721.12
A. Datum	A. Datum All in One Digital Camera M200 Green	\$4,043,650.64
A. Datum	A. Datum All in One Digital Camera M200 Grey	\$4,086,728.96
A. Datum	A. Datum All in One Digital Camera M200 Orange	\$3,555,527.44
A. Datum	A. Datum All in One Digital Camera M200 Pink	\$4,126,214.6
A. Datum	A. Datum All in One Digital Camera M200 Silver	\$4,026,294.48
A. Datum	A. Datum Bridge Digital Camera M300 Azure	\$3,777,346.188
A. Datum	A. Datum Bridge Digital Camera M300 Black	\$3,728,436.327
A. Datum	A. Datum Bridge Digital Camera M300 Green	\$3,873,693.138
A. Datum	A. Datum Bridge Digital Camera M300 Grey	\$4,093,070.751
A. Datum	A. Datum Bridge Digital Camera M300 Orange	\$4,140,926.496
A. Datum	A. Datum Bridge Digital Camera M300 Pink	\$4,050,741.639
Total		\$8,341,224,364.8324

Page 1 of 1

File Edit Selection View Go Run Terminal Help

Lucient - Power BI CICD

EXPLORER

OPEN EDITORS 1 unsaved

PBIP > PBI > Models > Contoso.Dataset > model.bim

LUCIENT - POWER BI CICD

PBIP \ PBI

Models

Contoso.Dataset

.pbi

definition.pbdataset

diagramLayout.json

item.config.json

item.metadata.json

model.bim

Contoso.Report

.gitignore

Contoso.pbip

Reports

PBITools

README.md

model.bim M

```
443     "value": "{\"currencyCulture\":\"en-US\"}"
444   }
445 ],
446 "dataType": "decimal",
447 "formatString": "\$\#,0.#####;(\\$\#,0.#####);\\$\#,0.#####",
448 "lineageTag": "856f228f-79e6-416c-bdf6-4139a538dee9",
449 "sourceColumn": "SalesAmount",
450 "summarizeBy": "sum"
451 }
452 ],
453 "lineageTag": "1a096bea-605a-42a5-a9af-614dd99f0fd5",
454 "measures": [
455   {
456     "name": "Sales 1",
457     "annotations": [
458       {
459         "name": "PBI_FormatHint",
460         "value": "{\"currencyCulture\":\"en-US\"}"
461       }
462     ],
463     "expression": "sum(Sales[SalesAmount])",
464     "formatString": "\$\#,0.#####;(\\$\#,0.#####);\\$\#,0.#####",
465     "lineageTag": "41c5a5d0-efde-4c77-b2a0-ab2835005b9b"
466   },
467   {
468     "name": "Sales 2",
469     "annotations": [
470       {
471         "name": "PBI_FormatHint",
472         "value": "{\"currencyCulture\":\"en-US\"}"
473       }
474     ],
475     "expression": "sum(Sales[SalesAmount])",
476     "formatString": "\$\#,0.#####;(\\$\#,0.#####);\\$\#,0.#####",
477     "lineageTag": "4e3adbed-6353-4ba5-b0c1-64019a124df1"
478   },
479   {
480     "name": "Sales 3",
481     "annotations": [
482       {
483         "name": "PBI_FormatHint",
484         "value": "{\"currencyCulture\":\"en-US\"}"
485       }
486     ],
487     "expression": "sum(Sales[SalesAmount])",
488     "formatString": "\$\#,0.#####;(\\$\#,0.#####);\\$\#,0.#####",
489     "lineageTag": "361be1a1-5302-4cbc-b82e-d342ad850cad"
490   },

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PowerShell 7.3.6

A new PowerShell stable release is available: v7.4.0
Upgrade now, or check out the release page at:
<https://aka.ms/PowerShell-Release?tag=v7.4.0>

PS C:\Work\DevOps\Lucient - Power BI CICD>

main-wpc2023* 0 0 △ 0 0 0

Ln 476, Col 1 (167 selected) Spaces: 2 UTF-8 CRLF Plain Text

3:37 PM 11/22/2023

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External ALM DAX Tabular Tabular Editor Toolkit Studio Editor 3

Contoso.pbix (localhost:53806) - Tabular Editor 2.19.0

File Edit View Model Tools Perspective: (All objects) Translation: (No translation) Filter

Expression Editor C# Script Property:

Model Data Sources Perspectives Relationships Roles Shared Expressions Tables Channel Sales Sales 1 Sales 2 Sales 3 Sales 4 sales 4 UnitCost UnitPrice SalesQuantity ReturnQuantity ReturnAmount DiscountQuantity DiscountAmount TotalCost SalesAmount Stores Promotion ProductSubcategory ProductCategory Product Geography Calendar Translations

Connected successfully. 0 BP issues

Sales 2

€3,523,146.055
€4,103,237.84
€4,140,721.065
€3,818,974.185
€4,220,782.67
€3,950,407.695
€3,808,853.62
€681,398.52
€4,037,721.12
€4,043,650.64
€4,086,728.96
€3,555,527.44
€4,126,214.6
€4,026,294.48
€3,777,346.188
€3,728,436.327
€3,873,693.138
€4,093,070.751
€4,140,926.496
€4,050,741.639
8,341,224,364.8324

Filters Visualizations Data

Build visual

Filters on this visual ...

- BrandName is (All)
- ProductName is (All)
- Sales 1 is (All)
- Sales 2 is (All)
- sales 4 is (All)

Add data fields here

Filters on this page ...

- BrandName
- ProductName
- Sales 1
- sales 4
- Sales 2

Add data fields here

Filters on all pages ...

- BrandName
- ProductName
- Sales 1
- sales 4
- Sales 2

Add data fields here

Drill through Cross-report Keep all filters Add drill-through fields here

Columns

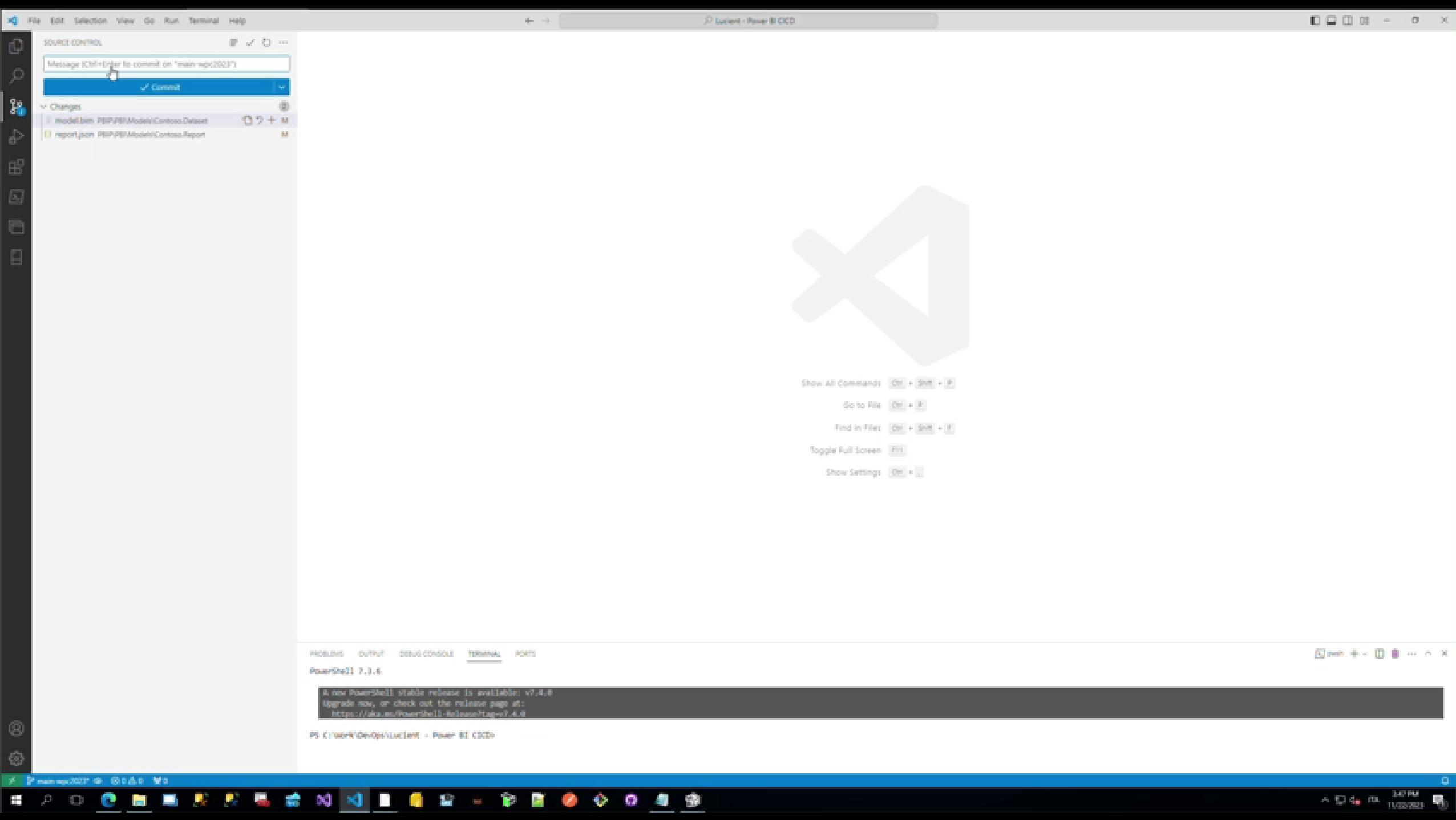
- BrandName
- ProductName
- Sales 1
- sales 4
- Sales 2

Drill through Cross-report Keep all filters Add drill-through fields here

BrandName Sales 1 Sales 2 Sales 3 sales 4 SalesAmount DiscountAmount DiscountQuantity ReturnAmount ReturnQuantity TotalCost UnitCost UnitPrice SalesQuantity ProductSubcategory ProductCategory Product Geography Calendar Translations

Page 1 + 100% 3:44 PM ITA 11/22/2023

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Lucient - Power BI CI/CD

main-wpc2023 / PBIP / PBI / Models / Contoso.Dataset / model.bim

model.bim

Contents History Compare Blame

You updated main-wpc2023 19m ago

```
465      "lineageTag": "41c5ab0-efde-4c//-b2a0-ab2835005b9b"
466    },
467  {
468    "name": "Sales 2",
469    "annotations": [
470      {
471        "name": "PBI_FormatHint",
472        "value": "{\"currencyCulture\":\"en-US\"}"
473      }
474    ],
475    "expression": "sum(Sales[SalesAmount])",
476    "formatString": "\u20ac#,###,###;(##,###);-\u20ac#,###,###"
477    "lineageTag": "4e5adbed-6553-4da3-00c1-04a019a1240f1
478  },
479  {
480    "name": "Sales 3",
481    "annotations": [
482      {
483        "name": "PBI_FormatHint",
484        "value": "{\"currencyCulture\":\"en-US\"}"
485      }
486    ],
487    "expression": "sum(Sales[SalesAmount])",
488    "formatString": "\u20ac#,###,###;(##,###);-\u20ac#,###,###",
489    "lineageTag": "361be1a1-5302-4cbc-b82e-d342ad850cad"
490  },
491  {
492    "name": "Sales 4",
493    "annotations": [
494      {
495        "name": "PBI_FormatHint",
496        "value": "{\"currencyCulture\":\"en-US\"}"
497      }
498    ],
499    "expression": "sum(Sales[SalesAmount])",
500    "formatString": "\u20ac#,###,###;(##,###);-\u20ac#,###,###",
501    "lineageTag": "ffaaadbb-1370-4e6d-b34b-c6f43933cec8"
502  },
503  {
504    "name": "Sales 4 1",
505    "annotations": [
506      {
507        "name": "PBI_FormatHint",
508        "value": "{\"currencyCulture\":\"en-US\"}"
509      }
510    ],
511    "expression": "sum(Sales[SalesAmount])",
512    "formatString": "\u20ac#,###,###;(##,###);-\u20ac#,###,###",
513    "lineageTag": "081477cb-6236-4de1-945f-37a62bbe384d"
514  }
```

The screenshot shows the Azure DevOps interface for a commit titled "commit changes 1". The commit was made by user R1k91 20 minutes ago on branch main-wpc2023. The commit details show 2 changed files: "model.bim" and "report.json".

model.bim - 1+25

File content (diffed):

```
487     "expression": "sum(Sales[SalesAmount])",
488     "formatString": "\$\#,0.#####;\$\#,\$\#;0.#####",
489     "lineageTag": "361be1a1-5302-4cbc-b82e-d342ad850cad"
490   },
491   {
492     "name": "sales 4",
493     "annotations": [
494       {
495         "name": "PBI_FormatHint",
496         "value": "{\"currencyCulture\":\"en-US\"}"
497       }
498     ],
499     "expression": "sum(Sales[SalesAmount])",
500     "formatString": "\$\#,0.#####;\$\#,\$\#;0.#####",
501     "lineageTag": "ffaaadb-1370-4e6d-b34b-c6f4393cec8"
502   },
503   {
504     "name": "sales 4 1",
505     "annotations": [
506       {
507         "name": "PBI_FormatHint",
508         "value": "{\"currencyCulture\":\"en-US\"}"
509       }
510     ],
511     "expression": "sum(Sales[SalesAmount])",
512     "formatString": "\$\#,0.#####;\$\#,\$\#;0.#####",
513     "lineageTag": "081477cb-6236-4de1-945f-37a62bbe384d"
514   },
515   "partitions": [
516 }
```

report.json - 5+5

File content (diffed):

```
11     "name": "ReportSection",
12     "visualContainers": [
13       {
14         "config": "{\"name\":\"\\\"334ecb7737726c7714d1\\\",\\\"layouts\\\":[{\\\"id\\\":0,\\\"position\\\":{\\\"x\\\":279.43273905996
15           "filters": "[1",
16           "height": 300.00,
17           "width": 300.00,
18           "x": 279.43,
19           "y": 125.26,
20           "z": 0.00
21         }],
22       },
```

The "model.bim" file shows significant changes in the lineageTag and annotations sections. The "report.json" file shows changes in the "filters" and "z" properties of a visual container configuration.

https://dev.azure.com/ONE4-BI/Lucent%20-%20Power%20BI%20CICD/_git/Lucent%20-%20Power%20BI%20CICD/pullrequests?_a=mine

Azure DevOps ONE4-BI / Lucent - Power BI CICD / Repos / Pull requests / Lucent - Power BI CICD

Search

New pull request Customize view

Lucent - Power BI CICD +

Overview Boards Repos Files Commits Pushes Branches Tags Pull requests Advanced Security Pipelines Test Plans Artifacts

Mine Active Completed Abandoned

You updated 89 main-wpc2023 21m ago

Create a pull request X

Currently, no pull requests need your attention

Pull requests allow you to review code and help ensure quality before merge. Learn more

New pull request

Project settings <<









IT moves your business



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main ▾

/ PBIP / PBI / Models / Contoso.Dataset / model.bim

model.bim

Contents History Compare Blame

```
463     "expression": "sum(Sales[SalesAmount])",
464     "formatString": "\$\#,0.#####;(\\$\#,0.#####);\\$\#,0.#####",
465     "lineageTag": "41c5a5d0-efde-4c77-b2a0-ab2835005b9b"
466   },
467   {
468     "name": "Sales 2",
469     "annotations": [
470       {
471         "name": "PBI_FormatHint",
472         "value": "{\"currencyCulture\":\"en-US\"}"
473       }
474     ],
475     "expression": "sum(Sales[SalesAmount])",
476     "formatString": "\$\#,0.#####;(\\$\#,0.#####);\\$\#,0.#####",
477     "lineageTag": "4e3adbed-6353-4ba5-b0c1-64019a124df1"
478   },
479   {
480     "name": "Sales 3",
481     "annotations": [
482       {
483         "name": "PBI_FormatHint",
484         "value": "{\"currencyCulture\":\"en-US\"}"
485       }
486     ],
487     "expression": "sum(Sales[SalesAmount])",
488     "formatString": "\$\#,0.#####;(\\$\#,0.#####);\\$\#,0.#####",
489     "lineageTag": "361be1a1-5302-4cbc-b82e-d342ad850cad"
490   },
491   {
492     "name": "sales 4",
493     "annotations": [ ↴
494       {
495         "name": "PBI_FormatHint",
496         "value": "{\"currencyCulture\":\"en-US\"}"
497       }
498     ],
499     "expression": "sum(Sales[SalesAmount])",
500     "formatString": "\$\#,0.#####;(\\$\#,0.#####);\\$\#,0.#####",
501     "lineageTag": "ffaaadbb-1370-4e6d-b34b-c6f43933cec8"
502   },
503   {
504     "name": "sales 4 1",
505     "annotations": [
506   ]
```



Demo PBIP pt. 2



Let's collaborate on it

```
main
main-feature1
* main-feature2
```




main-feature1 / PBIP / PBI / Models / Contoso.Dataset / model.bim

model.bim

Contents History Compare Blame

You updated main-feature1 22m ago

```
459     "name": "PBI_FormatHint",
460     "value": "{\"currencyCulture\":\"en-US\"}"
461   }
462 ],
463 "expression": "sum(Sales[SalesAmount])",
464 "formatString": "\$\#,0.#####;(##,##);##,##,##",
465 "lineageTag": "41c5a5d0-efde-4c77-b2a0-ab2835005b9b"
466 },
467 {
468   "name": "Sales 2",
469   "expression": "sum(Sales[SalesAmount])",
470   "formatString": "\$\#,0.#####;(##,##);##,##,##",
471   "lineageTag": "4e3adbed-6353-4ba5-b0c1-64019a124df1"
472 },
473 {
474   "name": "Sales 3",
475   "annotations": [
476     {
477       "name": "PBI_FormatHint",
478       "value": "{\"currencyCulture\":\"en-US\"}"
479     }
480   ],
481   "expression": "sum(Sales[SalesAmount])",
482   "formatString": "\$\#,0.#####;(##,##);##,##,##",
483   "lineageTag": "361be1a1-5302-4cbc-b82e-d342ad850cad"
484 },
485 {
486   "name": "sales 6",
487   "annotations": [
488     {
489       "name": "PBI_FormatHint",
490       "value": "{\"currencyCulture\":\"en-US\"}"
491     }
492   ],
493   "expression": "sum(Sales[SalesAmount])",
494   "formatString": "\$\#,0.#####;(##,##);##,##,##",
495   "lineageTag": "361be1a1-5302-4cbc-b82e-d342ad850cad"
496 }
```


File Edit Selection View Go Run Terminal Help

Lucent - Power BI CICD

SOURCE CONTROL

Message (Ctrl+Enter) commit on "main-feature2"

✓ Commit

Changes report.json PBIP\PBIModels\Contoso.Report

PBIP > PBIP > Models > Contoso.Report > report.json ...

```
1 {
2- "config": {"version": "5.37", "themeCollection": {"customTheme": {"name": "ThemeNew1", "version": "1.0.0"}}, "layoutOptimization": 0, "sections": [
3-     {
4-         "config": "{}",
5-         "displayName": "Page 1",
6-         "displayOption": 0,
7-         "filters": [],
8-         "height": 720.00,
9-         "name": "ReportSection",
10-        "visualContainers": [
11-            {
12-                "config": {"name": "334ecb7737726c7714d1"}, "layouts": [{"id": 0, "position": {"x": 279.39464493, "y": 125.28, "z": 0.00}, "filters": [], "height": 300.24, "width": 447.03, "x": 279.39, "y": 125.28}, {"id": 1, "position": {"x": 150.02, "y": 458.58, "z": 1.00}, "filters": [], "height": 261.42, "width": 300.04, "x": 150.02, "y": 458.58}], "width": 960.00
13-            }
14-        ],
15-        "width": 960.00
16-    }
17-]
18-}
19-}
20-}
21-}
22-}
23-}
```

→ 21+
22+
23+
24+
25+
26+
27+
28+
29+
30+
31+
32+
33+
34+
35+
36+
37+
38+
39+

```
1 {
2- "config": {"version": "5.37", "themeCollection": {"customTheme": {"name": "ThemeNew1", "version": "1.0.0"}}, "layoutOptimization": 0, "sections": [
3-     {
4-         "config": "{}",
5-         "displayName": "Page 1",
6-         "displayOption": 0,
7-         "filters": [],
8-         "height": 720.00,
9-         "name": "ReportSection",
10-        "visualContainers": [
11-            {
12-                "config": {"name": "334ecb7737726c7714d1"}, "layouts": [{"id": 0, "position": {"x": 279.39464493, "y": 125.28, "z": 0.00}, "filters": [], "height": 300.24, "width": 447.03, "x": 279.39, "y": 125.28}, {"id": 1, "position": {"x": 150.02, "y": 458.58, "z": 1.00}, "filters": [], "height": 261.42, "width": 300.04, "x": 150.02, "y": 458.58}], "width": 960.00
13-            }
14-        ],
15-        "width": 960.00
16-    }
17-]
18-}
19-}
20-}
21-}
22-}
23-}
24-}
25-}
26-}
27-}
28-}
29-}
30-}
31-}
32-}
33-}
34-}
35-}
36-}
37-}
38-}
39-}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

remotes/origin/main-rperico-ft1
remotes/origin/main-rperico-ft2
remotes/origin/main-rperico-wp2023
remotes/origin/main-wpc2023

PS C:\Work\DevOps\Lucient - Power BI CICD> git branch -a

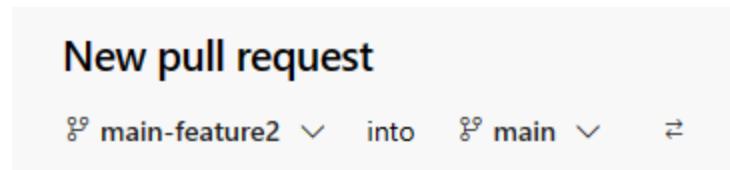
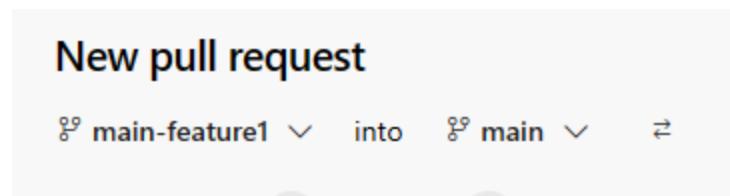
```
main
main-feature1
* main-feature2
  remotes/origin/HEAD -> origin/main
  remotes/origin/main
  remotes/origin/main-Rperico
  remotes/origin/main-academy
  remotes/origin/main-academy-f1
  remotes/origin/main-academy-f2
  remotes/origin/main-restore
  remotes/origin/main-rperico-ft1
  remotes/origin/main-rperico-ft2
  remotes/origin/main-rperico-wp2023
  remotes/origin/main-wpc2023
```

PS C:\Work\DevOps\Lucient - Power BI CICD>





Let's push them into main



main

Commits

Graph	Commit
	Merged PR 55: added pie chart and page 2 b5066b70 Riccardo Perico Just now
	added pie chart and page 2 bc5358e4 R1k91 Today at 5:14 PM
	Merged PR 54: added measure sales 6 89e4d845 Riccardo Perico Just now
	added measure sales 6 ed52b043 R1k91 Today at 4:49 PM

Contoso • Last saved: Today at 5:13 PM

File Home Insert Modeling View Optimize Help External tools

Cut Copy Format painter Paste Get data Excel workbook OneLake data hub SQL Server Enter data Dataverse Recent sources Transform Refresh data New visual Text box More Insert New measure measure Calculations Sensitivity Share

Clipboard

Filters

Visualizations

Data

Sales

Values

Drill through

Cross-report

Keep all filters

Add drill-through fields here

Build visual

Search

Search

Page 1 Page 2 +

Page 1 of 2

BOOM!





Demo PBIP pt. 3

Attach git to PBI workspace

Workspace settings

About

Premium

Azure connections

System storage

Git integration

Other

Power BI

Workspace settings

Git integration

Connect to Git with Azure DevOps to manage your code and back up your work. [Learn more](#)

 View Azure DevOps account

 Connect Git repository and branch

Organization *
ONE4-BI

Project *
Lucient - Power BI CICD

Git repository *
Lucient - Power BI CICD

Branch * 
main

Git folder 
PBIP/PBI/Models

Connect and sync **Cancel**



Automatic Sync happens

The screenshot shows the Power BI service interface with the following elements:

- Top navigation bar with buttons: + New, Upload, Create deployment pipeline, Create app, and Manage access.
- A table listing datasets:

Name	Git status	Type
Contoso	Synced	Report
Contoso	Synced	Semantic model
- Bottom navigation bar with icons for Power BI, GitHub (main branch), Last synced (11/22/2023 at 5:31 PM), and a commit hash (b5066b70).

Pull requests - Repos x Power BI x | +

https://dev.azure.com/ONE4-BI/Lucent%20-%20Power%20BI%20CICD/_git/Lucent%20-%20Power%20BI%20CICD/pullrequestcreate?sourceRef=&targetRef=main&sourceRepositoryId=8592a874-f466-402d-b305-6b863d71bc52&targetRepositoryId=8592a874-f466-402d-b305-6...

Azure DevOps ONE4-BI / Lucent - Power BI CICD / Repos / Pull requests / Lucent - Power BI CICD

Search

New pull request

Select a source branch... into main

Overview Boards Repos Files Commits Pushes Branches Tags Pull requests Advanced Security Pipelines Test Plans Artifacts

Project settings

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Supported Items



- Semantic Models (except push datasets, live connections, models created from warehouse and Lakehouse and model v1)
 - Lakehouse
 - Notebooks
 - Paginated reports
 - Reports (except reports live connected to AAS and SSAS)



Prerequisites to step forward





Dictionary

- Model Report
 - Import mode pbix → with data in it
 - May have pages
 - Should not be used to present data to user
- Thin Report
 - Live connected mode pbix → w/o data
 - Must have pages
 - Used to present data to user



What it is TMDL?

Tabular Model Definition Language (TMDL) is an object model definition syntax for tabular data models at compatibility level 1200 or higher.

Key elements of TMDL include:

Full compatibility with the entire Tabular Object Model (TOM).

Text-based and optimized for human interaction and readability. TMDL uses a grammar syntax similar to YAML. Each TMDL object is represented in text with minimal delimiters and uses indentation to demark parent-child relationships.

Better editing experience, especially on properties with embed expressions from different content-types, like Data Analysis Expression (DAX) and M.

Better for collaboration because of its folder representation where each model object has an individual file representation, making it more source control friendly.

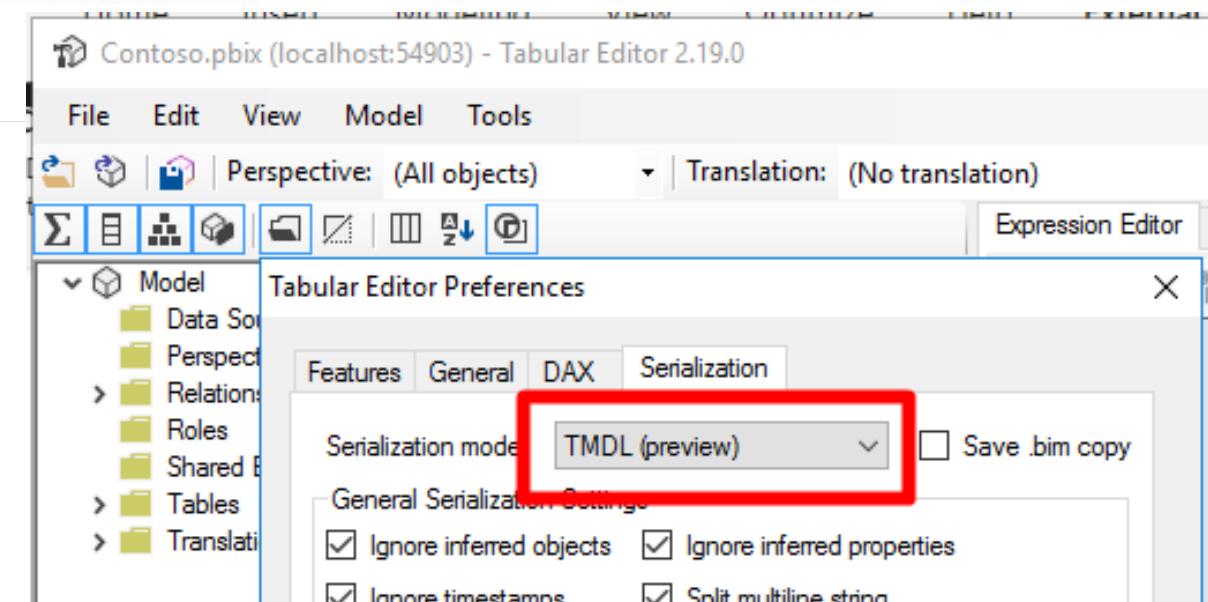
External tools work with TMDL



Source Control and DevOps for Power BI

pbi-tools solves a long-standing problem in the Power BI development community. It provides tools to bring Power BI projects under source control, enabling professional development workflows and enhanced governance. Available for free and with open source code (MIT License) on GitHub.

Getting Started (Tutorial)





Demo TMDL

Contoso • Last saved: 8/3/2023 at 11:51 AM

Contoso.pbix (localhost:56468) - Tabular Editor 2.19.0

File Edit View Model Tools

Perspective: (All objects) Translation: (No translation) Filter

Model Data Sources Perspectives Relationships Roles Shared Expressions Tables Translations

Expression Editor C# Script

1

Filters Visualizations Data

Build visual

Search

Add data fields here

Filters on this page

Add data fields here

Filters on all pages

Add data fields here

Values

Add data fields here

Drill through

Cross-report Off

Keep all filters On

Add drill-through fields here

File saved. 0 BP issues

Page 1 of 1 Page 1 +

Powered by Innovation

Sign in Share

5:45 PM ITA 11/22/2023

DAX

Page 1 of 1



TMDL language

- › Model
- › cultures
- en-US.tmd
- › tables
 - Calendar.tmd
 - Channel.tmd
 - Geography.tmd
 - Product.tmd
 - ProductCategory.tmd
 - ProductSubcategory.tmd
 - Promotion.tmd
 - Sales.tmd
 - Stores.tmd
- model.tmd
- relationships.tmd

```
table Sales
  lineageTag: 1a096bea-605a-42a5-a9af-614dd99f0fd5
  ordinal: 2

  partition 'Sales-d01eb137-1ce7-4ee7-9755-443b893924c4' = M
    mode: Import
    expression:=
      let
        Source = Access.Database(File.Contents("C:\Users\owend\Documents\ContosoSalesV31_64bit.accdb")),
        _FactSales = Source{[Schema="",Item="FactSales"]}[Data],
        "#Removed Columns" = Table.RemoveColumns(_FactSales,{["CurrencyKey", "ETLLoadID", "LoadDate", "UpdateDate"]})
      in
        "#Removed Columns"

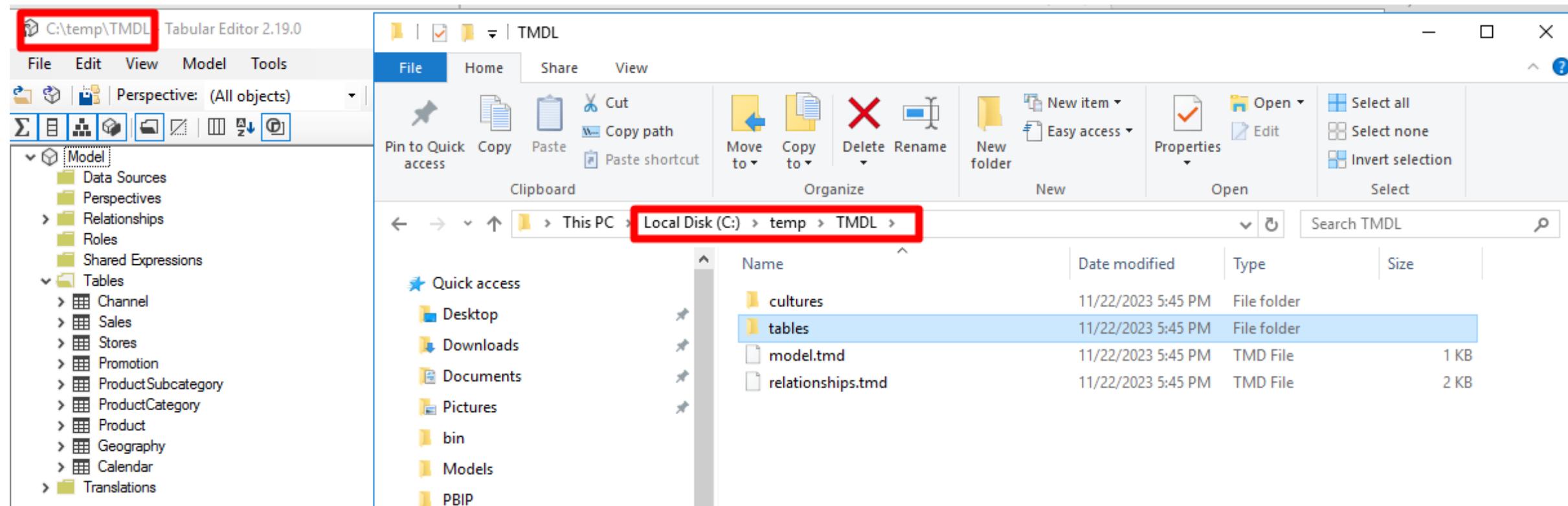
  column SalesKey
    dataType: Int64
    formatString:= 0
    isDataTypeInferred: false
    isHidden
    lineageTag: cbddd85a-0a22-4e9b-be6d-1cd0422b9ca9
    sourceColumn: SalesKey
    summarizeBy: Count
    annotation SummarizationSetBy = Automatic

  column DateKey
    dataType: DateTime
    formatString:= General Date
    isDataTypeInferred: false
    isHidden
    lineageTag: abd8636e-5b98-4b38-a85d-c5d26b512378
    sourceColumn: DateKey
    summarizeBy: None
    annotation SummarizationSetBy = Automatic

measure Sales = sum(Sales[SalesAmount])
formatString:= \$,0.#####; (\$,0.#####); \$,0.#####
lineageTag: d5bcc404-e414-4faa-8f24-fa7c3b11b43d
annotation PBI_FormatHint = {"currencyCulture":"en-US"}
```



TE can work with it





Sales 1

Sales 1

Filters > [Build visual](#)

Search:

Filters on this page: [Add data fields here](#)

Filters on all pages: [Add data fields here](#)

Values: [Add data fields here](#)

Drill through: [Cross-report](#) (Off) [Keep all filters](#) (On)

Add drill-through fields here

Visualizations > [Calendar](#) [Channel](#) [Geography](#) [Product](#)

- BrandName
- ClassName
- Manufacturer
- ProductDescription
- ProductName
- \sum UnitCost
- \sum UnitPrice
- ProductCategory
- ProductSubcategory
- Promotion
- Sales
- Stores



Deserializes report layout

The screenshot shows a file explorer window and a code editor side-by-side.

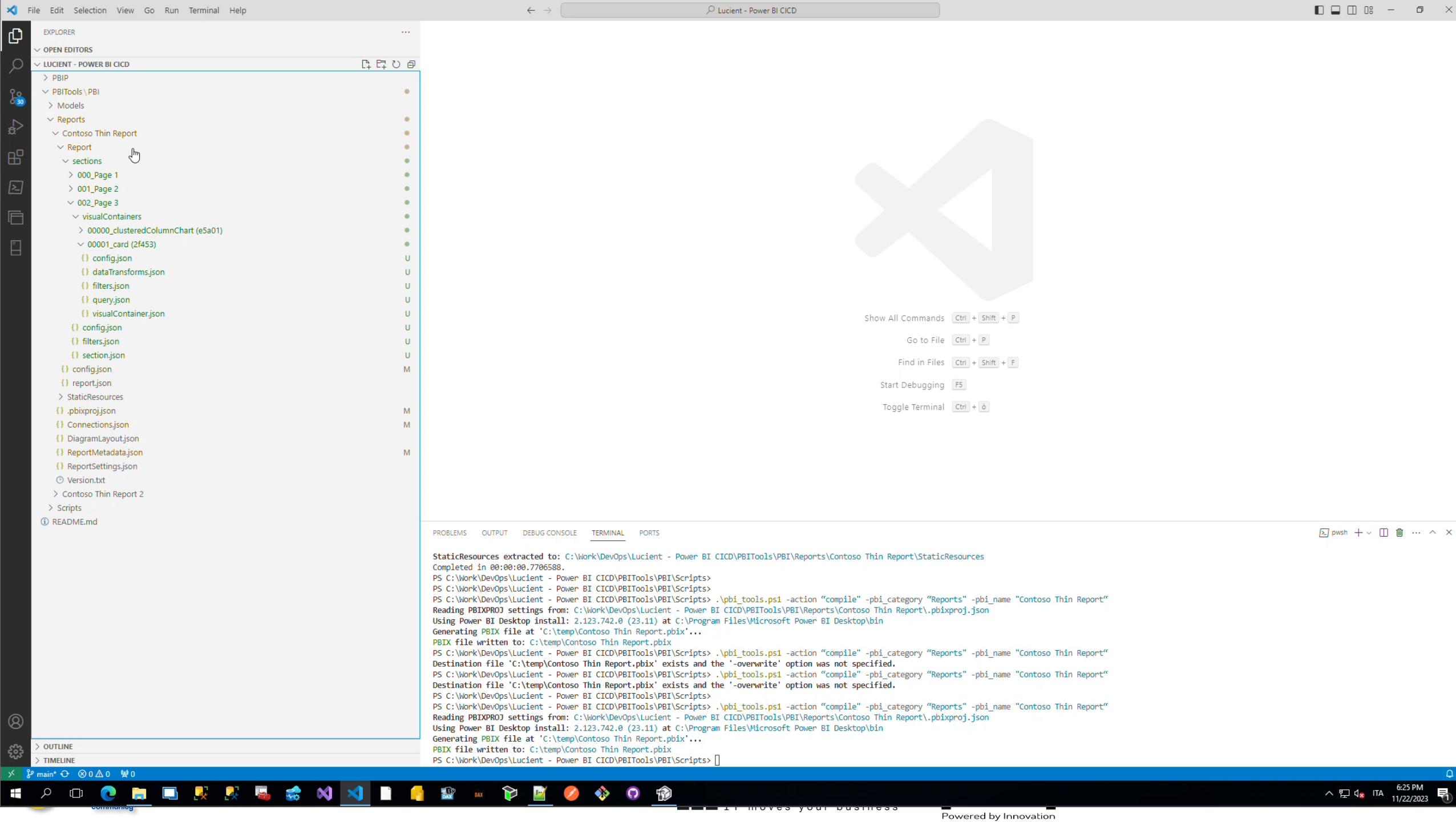
File Explorer: The left pane displays a directory structure for a Power BI report named "Contoso Thin Report". Key items shown include "Report", "sections", "000_Page 1", "001_Page 2", "002_Page 3", "visualContainers", "00000_clusteredColumnChart (e5a01)", "00001_card (2f453)", and several JSON files like "config.json", "dataTransforms.json", etc.

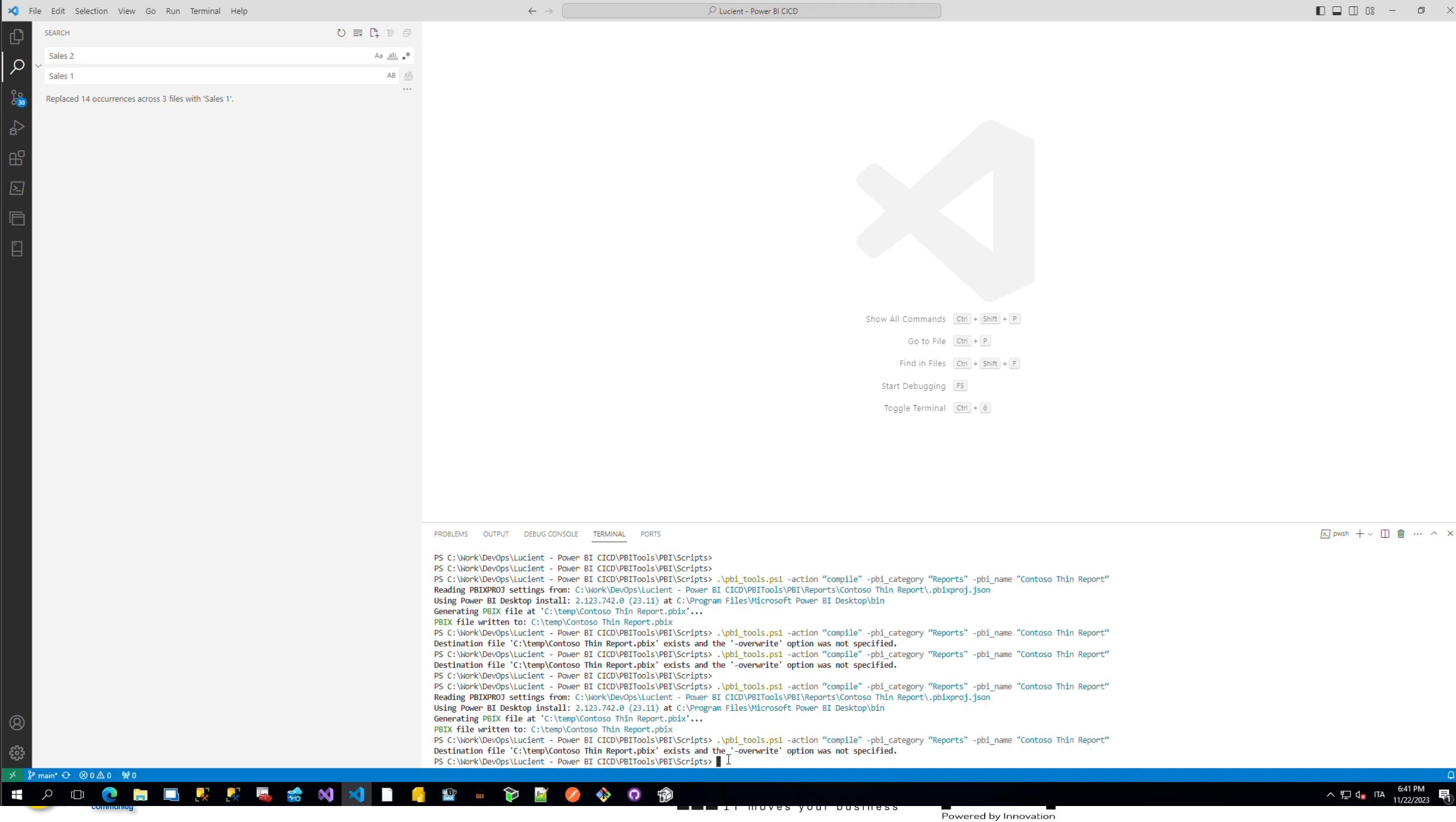
Code Editor: The right pane contains a PowerShell script snippet. It shows the deserialization of a JSON object representing a report layout. A specific section of the JSON is highlighted with a red box, and a portion of the corresponding PowerShell code is also highlighted with a red box.

```
1  {
2      "name": "2f45355cb35e407684ae",
3      "layouts": [
4          {
5              "id": 0,
6              "position": {
7                  "x": 150,
8                  "y": 420,
9                  "width": 300,
10                 "height": 300,
11                 "z": 1,
12                 "tabOrder": 1
13             }
14         },
15     ],
16     "singleVisual": {
17         "visualType": "card",
18         "projections": {
19             "Values": [
20                 {
21                     "queryRef": "Min(Product.BrandName)"
22                 }
23             ]
24         },
25         "prototypeQuery": {
26             "Version": 2,
27             "From": [
28                 {
29                     "Name": "p",
30                     "entity": "Product"
31                 }
32             ]
33         }
34     }
35 }
```

Below the code editor, a PowerShell prompt shows the command used to run the script:

```
PS C:\Work\DevOps\Lucient - Power BI CICD> cd 'C:\work\devops\Lucient'
PS C:\Work\DevOps\Lucient - Power BI CICD\PBITools\PBI\Scripts> .\pbipowerbi
Using DevOps RT Desktop install: 2.122.722.0 (2.11) at C:\Program Files
```



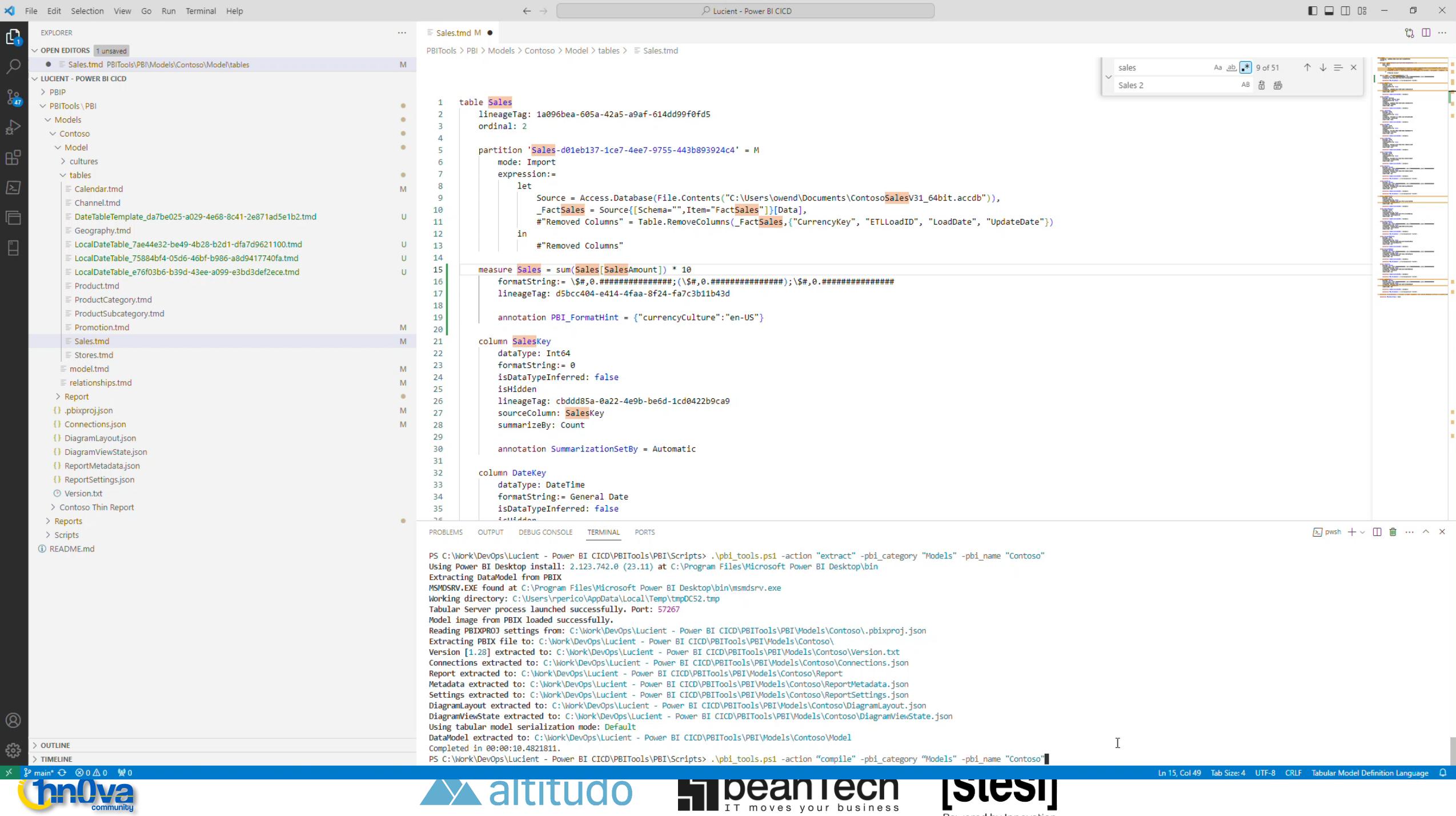




Write your own TMDL

The screenshot shows the Power BI Model Editor interface. On the left, the 'OPEN EDITORS' section indicates there is 1 unsaved file: Sales.tmd. The project structure tree shows nodes for PBIP, PBITools\PBI\, Models\Contoso\Model\tables, and specific files like Calendar.tmd, Channel.tmd, etc. The main editor area is titled 'Sales.tmd M' and shows the following T-ML code:

```
1 table Sales
  lineageTag: 1a096bea-605a-42a5-a9af-614dd99f0fd5
  ordinal: 2
  ...
  5 partition 'Sales-d01eb137-1ce7-4ee7-9755-443b893924c4' = M
    mode: Import
    expression:=
      let
        Source = Access.Database(File.Contents("C:\Users\owend\Documents\ContosoSalesV31_64bit.accdb")),
        _FactSales = Source{[Schema="",Item="FactSales"]}[Data],
        "#Removed Columns" = Table.RemoveColumns(_FactSales,{"CurrencyKey", "ETLLoadID", "LoadDate", "UpdateDate"})
      in
        "#Removed Columns"
  ...
  15 measure Sales = sum(Sales[SalesAmount]) * 10
    formatString:= '\$#,0.#####'; (\$,0.#####); \$#,0.#####
  lineageTag: d5bcc404-e414-4faa-8f24-fa7c3b11b43d
  ...
  19 annotation PBI_FormatHint = {"currencyCulture":"en-US"}
```





Caught it!

```
L Sales = sum(Sales[SalesAmount]) * 10
```

The screenshot shows a Power BI visualization interface. On the left, there is a code editor window containing the DAX formula: `L Sales = sum(Sales[SalesAmount]) * 10`. To the right of the code editor are three main sections: 'Add data fields here' (with a list of available fields like Calendar, Channel, Geography, Product, etc.), 'Filters on all pages' (with a 'Add data fields here' button), and 'Values' (with a 'Add data fields here' button). A large sidebar on the right lists various data fields under categories such as Sales, Product, and Geography, with the 'Sales' category currently expanded.

- Track report changes
- Track model changes
- Manage granular changes
- Possibility to compare versions
- Possibility to revert
- Possibility to answer customer complaints
- ...
- What else?

<https://medium.com/riccardo-perico/no-hands-visual-measures-swap-dfed6910231e>

<https://medium.com/riccardo-perico/power-bi-live-connection-switch-at-the-speed-of-light-b6ad23b1e3f9>





What about CD?



Deployment pipelines

The screenshot shows the Microsoft DXT Power BI Deployment pipelines interface. The title bar reads "Microsoft DXT | Power BI Deployment pipelines". The main area displays a "MyFoods- Full production pipeline" with three stages: Development, Test, and Production.

- Development:** Shows 1 DATAFLOW (preview), 5 DATASETS, 5 REPORTS, and 4 DASHBOARDS. Includes "Refresh all", "Publish app", and "Deploy to test" buttons.
- Test:** Shows 0.9 DATAFLOW (preview), 5 DATASETS, 5 REPORTS, and 4 DASHBOARDS. Includes "Refresh all", "Publish app", and "Deploy to production" buttons. A green circular arrow icon indicates a successful deployment from Development to Test.
- Production:** Shows 0 DATAFLOW (preview), 4 DATASETS, 6 REPORTS, and 3 DASHBOARDS. Includes "View app" and "Update app" buttons. A yellow circular arrow icon indicates a successful deployment from Test to Production.

On the left, a sidebar provides navigation options like Home, Favorites, and Recent items. The top right features a search bar, settings, and user profile icons.



Custom deploy stills an option

The screenshot shows the Azure DevOps Pipeline Editor interface. A red box highlights the pipeline name "publish to DevOps workspace". Step 10 is labeled above the Stage 1 section. Step 11 is labeled above the Power BI Actions configuration. Step 12 is labeled above the "Save" and "Create release" buttons. Step 13 is labeled above the "View YAML" and "Remove" buttons.

10.

All pipelines > publish to DevOps workspace

Pipeline Tasks Variables Retention Options History

Stage 1 Deployment process

Agent job Run on agent +

Power BI Action: Publish Power BI Actions +

11.

Power BI Actions ⓘ Task version 5.*

Display name * Power BI Action: Publish

Power BI service connection * ⓘ Manage ↗ newazuredevops + New

Action * ⓘ Upload Power BI report

Skip report uploading? ⓘ

Workspace name * ⓘ DevOps

Source file * ⓘ \$(System.DefaultWorkingDirectory)/_jihwan_kim/cicd_test.pbix

Overwrite Power BI file ⓘ

Create if the workspace does not exist ⓘ

Control Options ↴

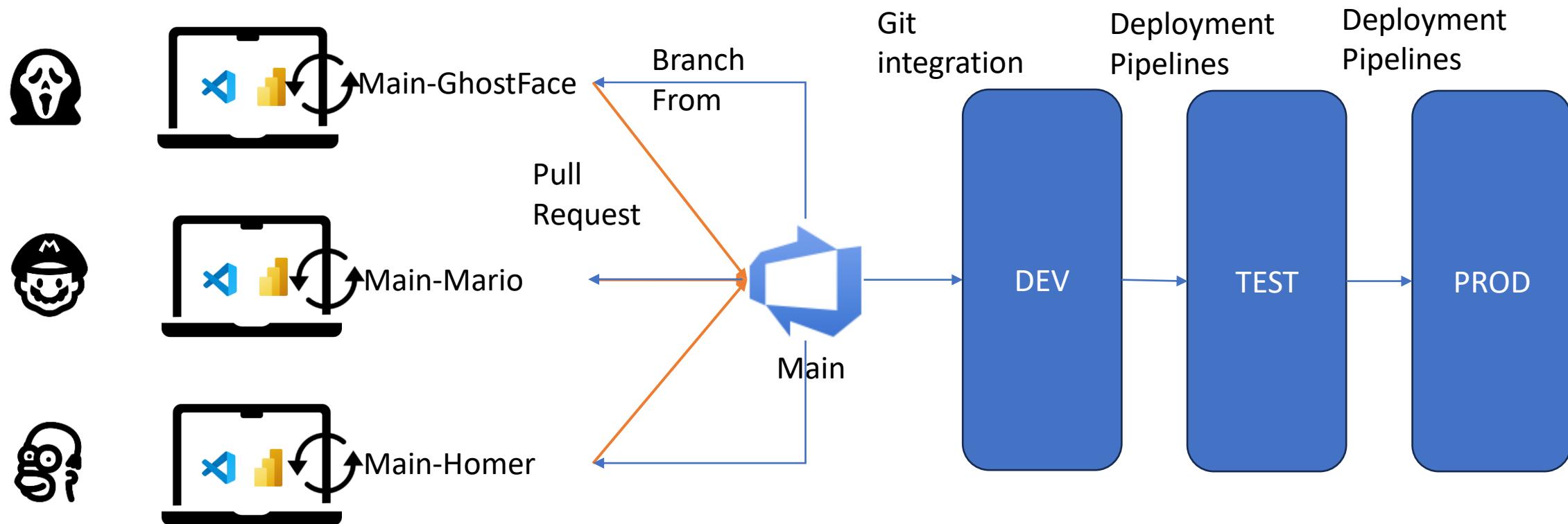
Output Variables ↴

12.

Save Create release View releases ...

View YAML Remove

13.



Topic	PBIP	TMDL + Ext. Tools	Result
Source Control for dataset	Single .bim file in TMDS	Folders/Files in TMDL	2
Source Control for report	1-line undocumented format	Undocumented folders/files format	2
PBI Desktop -> Files Files -> PBI Desktop	Pretty automatic	Manual process	1
Two face edit for dataset	Low Complexity	Low Complexity	1
Two face edit for report (unsupported)	Quite Impossible	Low Complexity	2
Power Query change	Hard Complexity	Low Complexity	2
Workspace git integration – support	Yes (*)	No	1
Workspace git integration – changes capture Git -> wrksp	Yes (*)	N/A	1
Workspace git integration – changes capture Wkrsp -> Git	Yes (*)	N/A	1
Folders/files structure Models/Reports support	Yes	Yes	X
Workspace git integration - Models/Reports structure support	No (*)	N/A	X
Workspace git integration – live connected reports support	Yes (*)	N/A	1
Publish from PBI Desktop	Yes	Yes	X
Data while working in PBI Desktop	Yes	Need to rehydrate .pbix	1
Data while in PBI Service	Git integration -> After refresh setup (*) Manual publish -> Yes	Yes	2

(*)





Huuuuuge news!

Microsoft Power BI Desktop

Microsoft Power BI Desktop is a companion product to app.powerbi.com.

Version: 2.126.927.0 32-bit (February 2024)

Power BI Project (.pbip) save option [Learn more](#)

Store semantic model using TMDL format [Learn more](#)

Contoso.Dataset > definition > tables > Sales.tmdl

```
1  table Sales
2    lineageTag: 1a096bea-605a-42a5-a9af-614dd99f0fd5
3
4    measure Sales = sum(Sales[SalesAmount])
5      formatString: '\$\#,0.#####';(\$\#,0.#####); \$#,0.#####
6      lineageTag: d5bcc404-e414-4faa-8f24-fa7c3b11b43d
7
8    annotation PBI_FormatHint = {"currencyCulture":"en-US"}
9
10   measure 'Sales 1' = sum(Sales[SalesAmount])
11     formatString: '\$\#,0.#####';(\$\#,0.#####); \$#,0.#####
12     lineageTag: 04d1e6b1-823b-473a-860f-2a0c7233e411
13
14   annotation PBI_FormatHint = {"currencyCulture":"en-US"}
15
16   column SalesKey
17     dataType: int64
18     isHidden
19     formatString: 0
20     lineageTag: cbddd85a-0a22-4e9b-be6d-1cd0422b9ca9
21     summarizeBy: count
22     sourceColumn: SalesKey
23
24   annotation SummarizationSetBy = Automatic
25
26   column DateKey
27     dataType: dateTime
28     isHidden
29     formatString: General Date
30     lineageTag: abd8636e-5b98-4b38-a85d-c5d26b512378
31     summarizeBy: none
32     sourceColumn: DateKey
33
34   annotation SummarizationSetBy = Automatic
35
36   column channelKey
37     dataType: int64
```



Other for layout



PBI Explorer is a free tool to

Take full ownership of your Power BI reports

PBI Explorer gives you a code-first view of your PBIX/PBIP reports. All visual properties, settings, and relationships are fully exposed in Tabular Editor style.

Inspect differences between report versions

PBI Explorer provides a git-like diff view between two reports, highlighting what's been modified or removed.

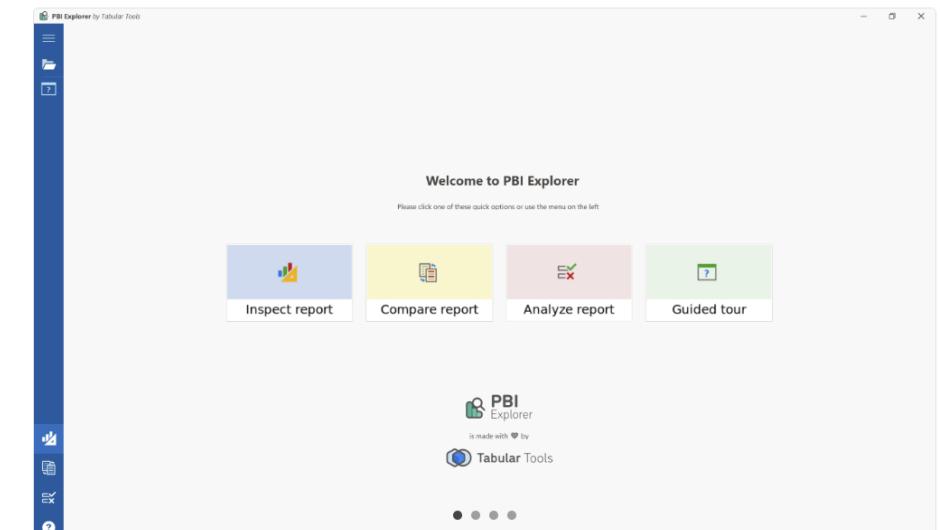
Understand how the data model is used by reports

PBI Explorer provides a view of all elements from the data model used in the report.

View difficult-to-see report features

PBI Explorer exposes all report features that are difficult to inspect visually (like bookmarks, filters, etc.).

PBI Explorer is free and will always be free.



Thank you!

