

Start with PowerBI & AI

"From Rookie to Rock"

Learn &
Practice

Quick Guide

Power BI project with **AI**



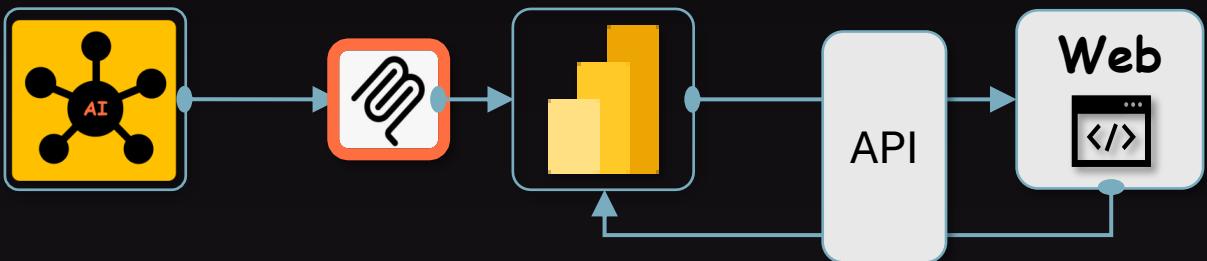
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Power BI project with AI

The steps



The challenge is to build a Power BI project (almost) entirely with AI. In this project, the AI's role is to connect to a website's API to access the data, then prepare and create the data model with its associated metrics. The compelling story to be told with the data will be told by humans, because that's my favorite part and also because AI works only (until now) on the semantic model.



Resources on GitHub

[Patou-Tips/#52 Patou Tips \(Quick guide to develop faster with TDML\) at main :](#)
[PatouTips/Patou-Tips](#)

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Summary



This guide shows what practices AI can (or cannot) reasonably do in a PowerBI project, whose functionalities can currently only act on the semantic model of a PowerBI project.

Part 1 Connect MCP server

- Installation of Visual Studio Code, Installation Claude, Installation MCP Server. Functionalities with MCP Server

Part 2 Connect Power BI to an API using AI

- Connect Power BI to an API and create PowerQuery request

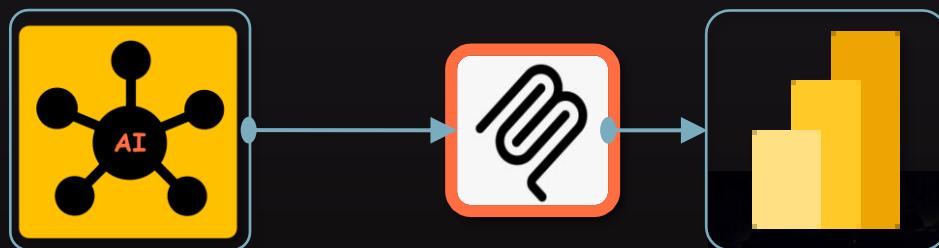
Part 3 Prepare a PowerBI project using AI

- Insert a graphic color guide, create a date dimension table, create a sales fact table, establish the relationship between 2 tables
- Create a measure in DAX and create a folder of measures

Power BI project with AI

Part 1

Connect MCP server



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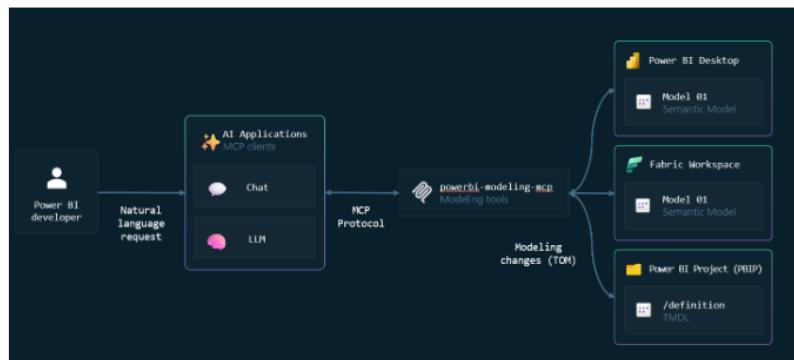
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About MCP server



Power BI Modeling MCP Server (Preview)

The [Model Context Protocol \(MCP\)](#) is an open standard that enables AI agents to securely connect with tools and services. The Power BI Modeling MCP Server brings Power BI semantic modeling capabilities to your AI agents through a local MCP server. This allows developers and AI applications to interact with Power BI models in entirely new ways, from using natural language to execute modeling changes to autonomous AI agentic development workflows.



November Power BI update (Microsoft information)

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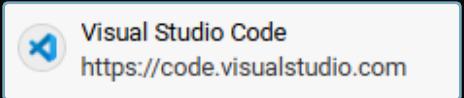
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Step 1: Software installation (1/2)



Install Visual Studio Code

- 1 Search with your browser "Visual Studio Code" and install it.



The screenshot shows the Visual Studio Code interface with the Extensions Marketplace open. A search bar at the top has 'powerbi' typed into it. Below the search bar, a list of extensions is shown. The 'Power BI Modeling MCP Server' extension by Microsoft is highlighted with a red circle and labeled '3'. To its right, a detailed view of the extension is shown in a modal window. This modal window has a large red circle around the 'Install' button, labeled '4'. The modal also shows the extension's name, developer, rating, and a brief description.

Open "VS Code" and search "powerbi" (2), select "Power BI Modeling MCP Server" (3), then click on install button (4), don't forget to select "Add to path" during the installation. Restart your computer.

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Step 1: Software installation (2/2)



Install Claude desktop

- 1 Search with your browser "Claude desktop" and install it.



- 2 Claude desktop is now installed !



→ Naturally,
Power BI desktop
is already
installed?

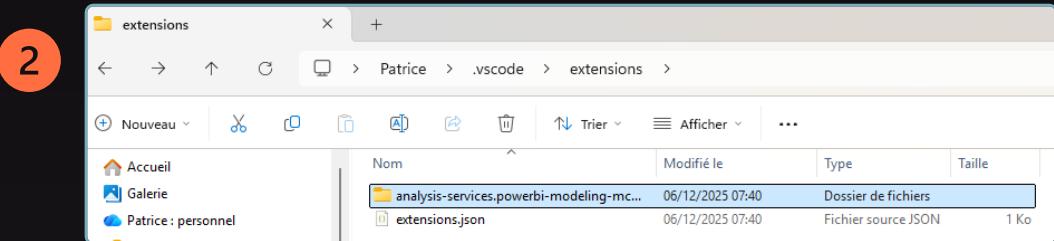
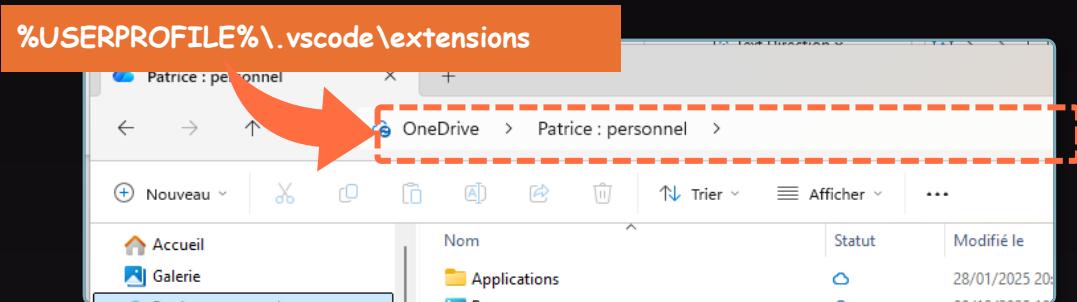
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Step 2: MCP server installation & config. (1/4)



Extension configuration of MCP Server

- Put the following code in the window search pane
%USERPROFILE%\.vscode\extensions



Open analysis-services.powerbi-modeling-mc... then server

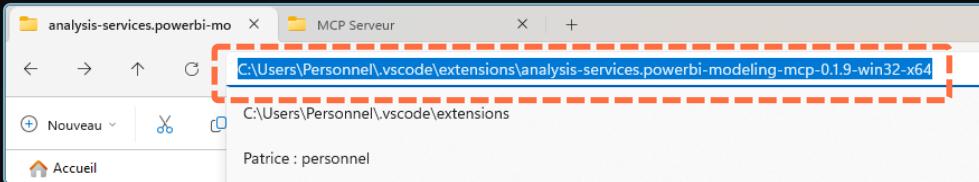
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Step 2: MCP server installation & config. (2/4)



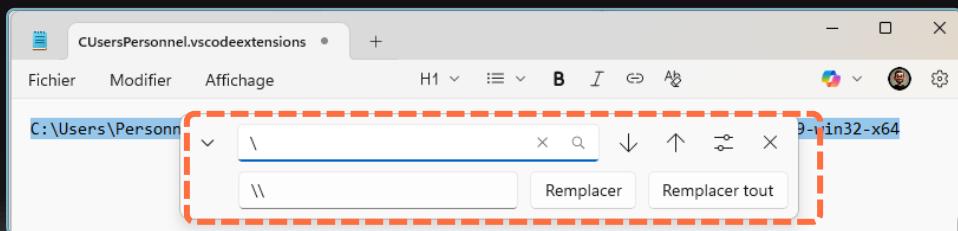
Extension configuration of MCP Server

- 3 Select the search panel and when the background is blue, copy the folder address (ctrl + C)



- 4 Open "Notepad" and paste (ctrl + V) the previous copy, the folder address.

- 5 In Notepad, replace (ctrl + H) in the folder address pasted: \ by \\. Keep the notepad file open.



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Step 2: MCP server installation & config. (3/4)



Extension configuration of MCP Server

6

The screenshot shows the MCP Server extension configuration interface. At the top, a message says "Patrice est de retour!". Below it, a sidebar menu includes "Paramètres" (highlighted with a red dashed box), "Langue", "Obtenir de l'aide", "Mettre à niveau l'abonnement", "En savoir plus", and "Se déconnecter". A main panel titled "Serveurs MCP locaux" contains the text "Ajoutez et gérez les serveurs MCP sur lesquels..." and a button labeled "Modifier la config" (highlighted with a red dashed box).

Open Claude and go in "Parameter" (bottom left) and select "Developer"

Click on "Modify the config" button.

7



Open with Notepad the file "claude_desktop_config.json".

8

Go in the Patou Tips GitHub (link in page 2) to open in the resources, the Notepad file named "MCP_Server_Code.txt" and copy the entire code (ctrl + C).

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10

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Step 2: MCP server installation & config. (4/4)

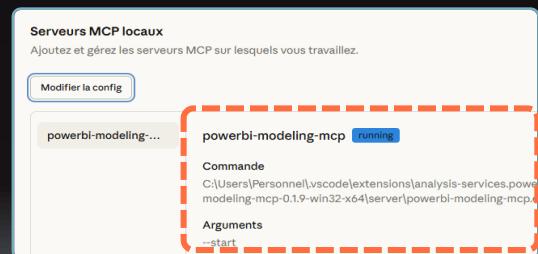
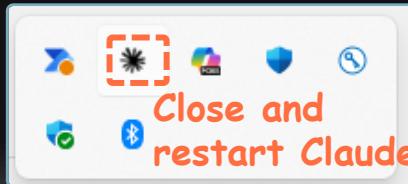


Extension configuration of MCP Server

- Paste the code in the ""claude_desktop_config.json" and replace the yellow part of the code with the folder address (see step 5).

```
{  
  "mcpServers": {  
    "powerbi-modeling-mcp": {  
      "command": "C:\\\\Users\\\\Personnel\\\\.vscode\\\\extensions\\\\analysis-services.powerbi-modeling-mcp-0.1.9-win32-x64\\\\server\\\\powerbi-modeling-mcp.exe",  
      "args": ["--start"]  
    }  
  }  
}
```

- Now close and restart Claude, also in the taskbar (bottom right). Go again in parameter, then developer part, the MCP server for PowerBI is there.



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Step 3: Functionalities with MCP Server



Bonjour

Comment puis-je vous aider ?

+ ≈ ⌂

powerbi-modeling-mcp

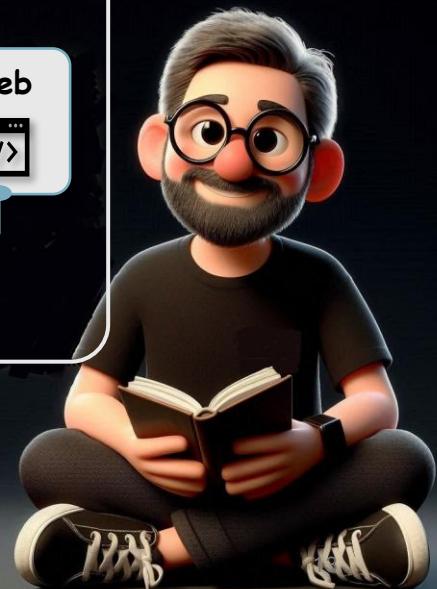
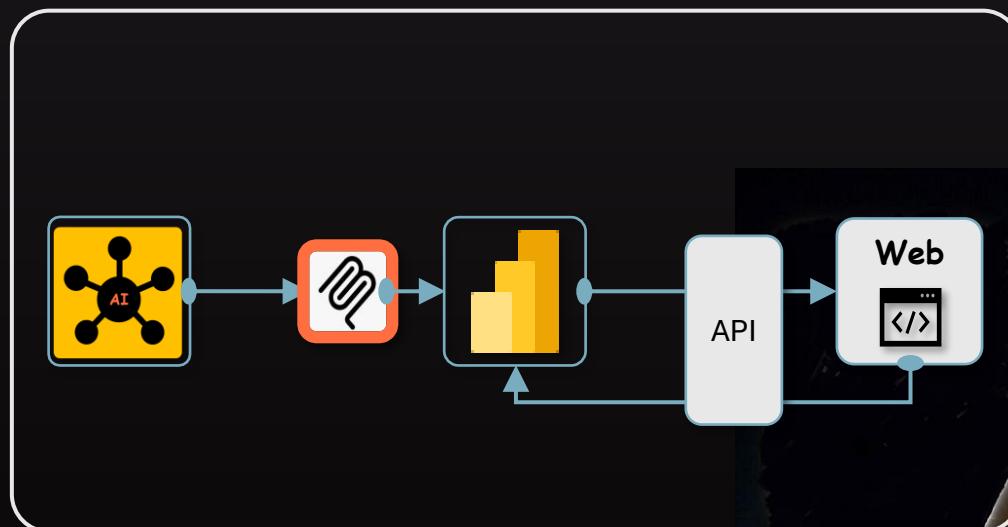
The search bar lists all possible functionalities between AI and Power BI via the MCP Server.

Forfait Free - Mettre à niveau		
P	Batch column operations	<input checked="" type="checkbox"/>
P	Database operations	<input checked="" type="checkbox"/>
P	Trace operations	<input checked="" type="checkbox"/>
P	Named expression operations	<input checked="" type="checkbox"/>
P	Measure operations	<input checked="" type="checkbox"/>
P	Object translation operations	<input checked="" type="checkbox"/>
P	Batch function operations	<input checked="" type="checkbox"/>
P	Batch measure operations	<input checked="" type="checkbox"/>
P	Batch perspective operations	<input checked="" type="checkbox"/>
P	Dax query operations	<input checked="" type="checkbox"/>
P	Perspective operations	<input checked="" type="checkbox"/>
P	Column operations	<input checked="" type="checkbox"/>
P	User hierarchy operations	<input checked="" type="checkbox"/>
P	Calculation group operations	<input checked="" type="checkbox"/>
P	Security role operations	<input checked="" type="checkbox"/>
P	Table operations	<input checked="" type="checkbox"/>
P	Relationship operations	<input checked="" type="checkbox"/>
P	Calendar operations	<input checked="" type="checkbox"/>
P	Model operations	<input checked="" type="checkbox"/>
P	Culture operations	<input checked="" type="checkbox"/>
P	Batch object translation operat...	<input checked="" type="checkbox"/>
P	Query group operations	<input checked="" type="checkbox"/>
P	Function operations	<input checked="" type="checkbox"/>
P	Transaction operations	<input checked="" type="checkbox"/>
P	Connection operations	<input checked="" type="checkbox"/>
P	Partition operations	<input checked="" type="checkbox"/>
P	Batch table operations	<input checked="" type="checkbox"/>

Power BI project with AI

Part 2

Connect Power BI to an API using AI



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Connect Power BI to an API using AI



With the MCP Server extension, tasks that previously required coding and significant time are now easily accomplished, such as **connecting Power BI to a website's API**.

The challenge is to extract data from the very interesting "**open FOOD facts**" website and create the table in Power BI from this data, **using a single prompt**.

📌 Note: In this example, the connection is made to a completely free website that doesn't require registration to obtain a token.

The screenshot shows the homepage of openFOODfacts.org. At the top, there is a navigation bar with 'Country' and 'English' dropdowns. The main header features the 'openFOODfacts' logo and a search bar with a magnifying glass icon. Below the header, a large green banner reads 'HELP US INFORM MILLIONS OF CONSUMERS AROUND THE WORLD ABOUT WHAT THEY EAT'. Underneath the banner is a large group photo of many people. To the right of the photo, there is a sidebar with a 'Please' button, a 'Your donations' section listing goals like 'keeping our data open', and a 'deductible à don de 20€' button. The main content area below the banner is titled 'Discover' and contains text about Open Food Facts being a food products database made by everyone for everyone. It includes a 'Learn more about Open Food Facts' button and a globe icon with a magnifying glass. To the right, there is a 'Contribute' section with text about volunteers adding products to the database across various platforms and devices.

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Connect Power BI to an API using AI



The website "open FOOD facts" offers excellent documentation on the API for retrieving the data.

The screenshot shows a web browser window with the following details:

- Address Bar:** open food facts - Product Opener (Open Food Facts Server)
- Toolbar:** GitHub icon, v2.83.0, 887, 511
- Left Sidebar (Api section):**
 - Product Opener (Open Food Facts Server)
 - Product Opener (Open Food Facts web server) documentation
 - Api**
 - Introduction to Open Food Facts API documentation
 - Introduction to the Robotoff Project
 - Tutorials for Common developer journeys
 - Tutorial on using the Open Food Facts API
 - Tutorial on uploading images to the Open Food Facts API
 - How to download product images
 - Explanation on Knowledge panels
 - Explanation on Product Attributes
 - Reference: API and product schema change log
 - Reference: Barcode Normalization
 - Reference: API CheatSheet
 - Reference OpenAPI documentation for API v2
 - Reference OpenAPI documentation for API v3
 - Open Food Facts AWS Images dataset
 - How to leverage links to Wikidata (and Wikipedia)
- Main Content Area:**

Introduction to Open Food Facts API documentation

Everything you need to know about Open Food Facts API.

[CAUTION] Are you going to use our API? Please read this documentation [entirely](#) before using it.

Overview

Open Food Facts is a food products database made by everyone, for everyone, that can help you make better choices about what you eat. Being open data, anyone can reuse it for any purpose.

The Open Food Facts API enables developers to get information like ingredients and nutritional values of products, and even add more *facts* to the products database. You can use the API to build applications that allow users to contribute to the database and make healthier food choices.

The current version of the API is 2.

Data in the Open Food Facts database is provided voluntarily by users who want to support the program. As a result, there are no assurances that the data is accurate, complete, or reliable. The user assumes the entire risk of using the data.

The next version of the API is 3.

This version is in active development and may be subject to frequent changes.

Before You Start

 - The Open Food Facts database is available under the [Open Database License](#).
- Right Sidebar (Table of contents):**
 - Table of contents
 - Overview
 - Before You Start
 - How to Best Use the API
 - General principles
 - Rate limits
 - If your users do not expect a result immediately (e.g., Inventory apps)
 - If your users expect a result immediately (e.g., Nutrition apps)
 - API Deployments
 - Authentication
 - Reference Documentation (OpenAPI)
 - Tutorials
 - Help
 - SDKs

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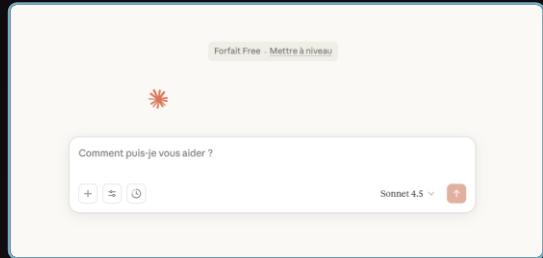
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Connect Power BI to an API using AI



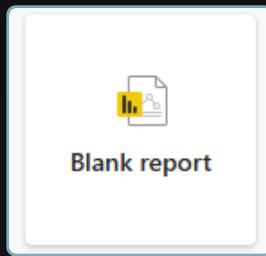
Regarding previous installations such as the "MCP Server for Power BI" extension via Visual Studio Code and the Claude AI desktop, as well as all settings, see Part 1.

- 1 Lauch Claude AI desktop



- 2 Create a new PowerBI file and let it open.

In this example, the Power BI file is named "Test API".



Power BI project with AI

Connect Power BI to an API using AI



Prompt

- 3 Can you complete the following three steps:
- 1 - Connect to the open Power BI file named "Test API"
 - 2 - Connect to the OPEN FOOD FACT website via an API
 - 3 - Create the query in Power Query and load the data into a table

Can you complete the following three steps:
1 - Connect to the open Power BI file named "Test API"
2 - Connect to the OPEN FOOD FACT website via an API
3 - Create the query in Power Query and load the data into a table

I'll help you complete these three steps. Let me start by connecting to the Power BI file and then setting up the Open Food Facts API connection.

Step 1: Connect to the Power BI file

Let me first check for available local Power BI Desktop instances:

Connection operations

Great! I found the "Test API" Power BI file. Now let me connect to it:

Connection operations

Step 1 Complete: Connected to "Test API" Power BI file

Step 2 & 3: Create Open Food Facts API Query in Power Query

The actions performed by Claude appear; Claude may ask you at a certain stage for permission to access your resources or files in order to continue the entire operation.

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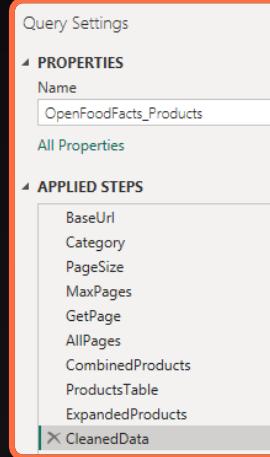
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Connect Power BI to an API using AI

The connection was established thanks to "Claude AI", who created all the operations in PowerQuery and the table in Power BI.

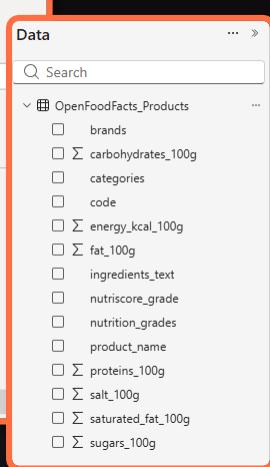
PowerQuery

4

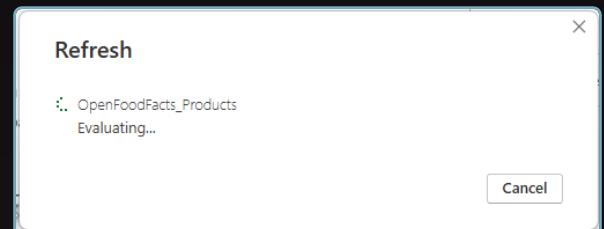


PowerBI

5



The connection is created and reusable. You can refresh the project as many times as needed.



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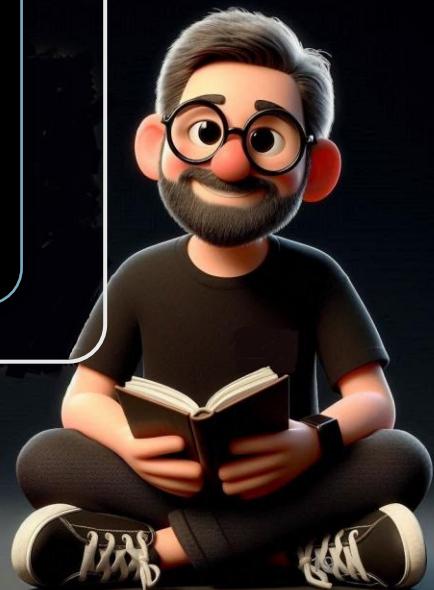
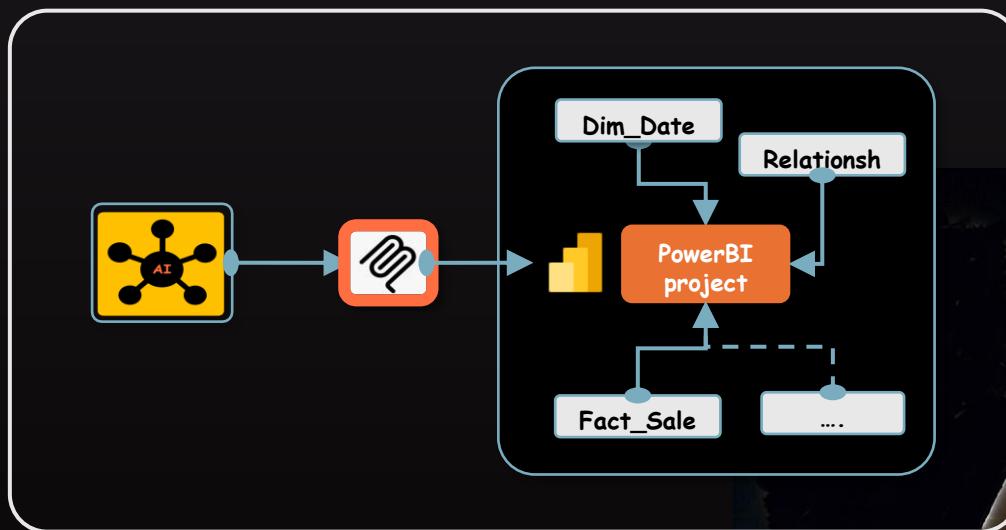
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18

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Part 3

Prepar a PowerBI project using AI



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Prepar a PowerBI project using AI



Finally, the last part of these tests is to review the results of creating a Power BI project with the help of AI. In this third part, we will try to test **four types of important operations** when preparing a Power BI project:

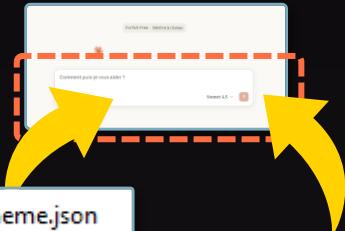
1. Insert the graphic color guide using a JSON color file
2. Create a date dimension table (Dim_Date) using a TDML script
3. Create a sales fact table (Fact_Sales) from an Excel file using Power Query
4. Establish the relationship between 2 tables, the Dim_Date and Fact_Sales tables in the modeling view
5. Create a measure in DAX → Average Sales
6. Create a folder of measures

Power BI project with AI

Prepar a PowerBI project using AI



Step 1: Insert the graphic color guide using a JSON color file

- 1  Create a Power BI file and name it "Test Graphic Chart".
Let the Power BI file open!
- 2  Launch "Claude AI" and enter in the search bar
the prompt below and the file containing the
JSON code (see the link on page 2 to get the
file on the "Patou Tips" GitHub repository).

Prompt

Can you create color inside the PowerBI file opened and named "Test Graphic Chart" with the following file "Theme.json"

Result: Impossible. The AI indicates a manual process. This is impossible, because color creation is not in the semantic model.

The standard way to apply your Solar theme would be to import it via Power BI Desktop:
View → Themes → Browse for themes → select Theme.json

Power BI project with AI

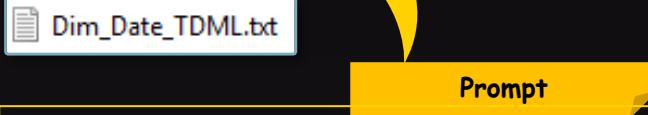
Prepar a PowerBI project using AI



Step 2: Create a date dimension table (Dim_Date) using a TDML script

- 1  Create a Power BI file and name it "Test 1 Dim_Date_TDML". Let the Power BI file open!

- 2  Launch "Claude AI" and enter in the search bar the prompt below and the file containing the TDML script (see the link on page 2 to get the file on the "Patou Tips" GitHub repository).



Prompt

Can you create inside the powerBI opened and named "Test 1 Dim_Date_TDML", a table named "Dim_date" according to the file with TDML script.

Result: Almost perfect. AI correctly generated the DAX code for the dimension level and recreated the date hierarchy, but the "date" field was not marked in the date table. This last step must be performed manually. See on Patou Tips Git Hub (link on p.4) result of this test > Test 1 Dim_Date_TDML.pbix.

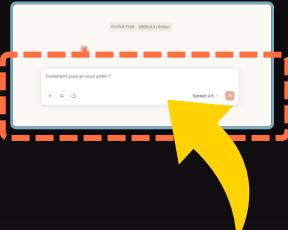
Power BI project with AI

Prepar a PowerBI project using AI



Step 3: Create a sales fact table (Fact_Sales) from an Excel file using Power Query

- 1  Create a Power BI file and name it " Test 2 Fact_Sales ".
Let the Power BI file open!

- 2 
Launch "Claude AI" and enter in the search bar the detailed prompt in the file named "Prompt for Test 2.txt" (see the link on page 2 to get the file on the "Patou Tips" GitHub repository).

Prompt

 Prompt for Test 2.txt

Open the file "Prompt for Test 2.txt", copy all the code and paste it into the search bar of Claude AI.

Result: The result is perfect, but all the steps in Power Query must be perfectly detailed. A final check is absolutely necessary to identify any omissions in the prompt.

See on Patou Tips Git Hub (link on p.4) result of this test > Test 2 Fact_Sales .pbix.

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Step 4: Establish the relationship between the Dim_Date and Fact_Sales tables in the modeling view

- 1  Create a Power BI file and name it "Test 3 Dim_Date - Fact_Sales - Relationship". Let the Power BI file open!
Note: This file comes from the previous steps 2 and 3.

- 2  Launch "Claude AI" and enter in the search bar the prompt below and the file containing the JSON code (see the link on page 4 to get the file on the "Patou Tips" GitHub repository).

Prompt

Can you create in the PowerBI file opened and named "Test 3 Dim_Date - Fact_Sales - Relationship" a link in the "model view" from the field "Date" of the table "Dim_Date" to the field "Date" of the table "Fact_Sales"

Result: The result is perfect

See on Patou Tips Git Hub (link on p.4) result of this test > Test 3 Dim_Date - Fact_Sales - Relationship.

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Prepar a PowerBI project using AI



Step 5: Create a measure in DAX → Average Sales (1/4)

Go in the **Patou Tips GitHub** (link in page 2) to use in the resources, the PowerBI file named "Example for MCP Server.pbix".

Open the PowerBI file and enter in Claude AI the exhaustive prompt

1

PROMPT 1

Can you connect to thePowerBI file open and named "Example for MCP Server" and do these steps:
1 - Create a measure named "Sales" with the sum of value in Fact_Sales table
2 - Create a measure of the yearly average of sales in 2023 usinf the previous measure named "Sales"

I'll help you connect to the Power BI file and create those measures. Let me start by connecting to the open Power BI Desktop instance.

06:30

Connection operations

Great! I found the Power BI file. Now let me connect to it.

Prompt 1

Can you connect to thePowerBI file open and named "Example for MCP Server" and do these steps:
1 - Create a measure named "Sales" with the sum of value in Fact_Sales table
2 - Create a measure of the yearly average of sales in 2023 using the previous measure named "Sales"

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Step 5: Create a measure in DAX → Average Sales (2/4)

2

The DAX measures are created, but the calculations can only be used to display a KPI, not a visualization. The visualization highlights the error.

```
Monthly Avg Sales 2023 =  
CALCULATE(  
    AVERAGEX(  
        VALUES(DimDate[YearMonth]),  
        Fact_Sales[Sales]  
    ),  
    DimDate[Year] = 2023  
)
```

17
Monthly Avg Sales 2023



Sales and Monthly Avg Sales 2023 by Month



Good for KPI,
not for graph

Power BI project with AI

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Step 5: Create a measure in DAX → Average Sales (3/4)

- 3 The right calculation by HUMAN (see Patou Tips #48) show something better.

```
Monthly Avg Sales 2023 by HUMAN =  
CALCULATE(  
    AVERAGEX(  
        VALUES(DimDate[Month]), Fact_Sales[Sales]),  
    FILTER(  
        ALL(DimDate),  
        DimDate[Year] = 2023))
```

17
Monthly Avg Sales 2023 by HUMAN



Sales and Monthly Avg Sales 2023 by HUMAN by Month

● Sales ● Monthly Avg Sales 2023 by HUMAN



Good for KPI
and for graph

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Patou Tips #57

Power BI project with AI

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Step 5: Create a measure in DAX → Average Sales (4/4)

4

With a more precise question, detailing the elements to be taken into account in the calculation, the results are correct.

Prompt 2

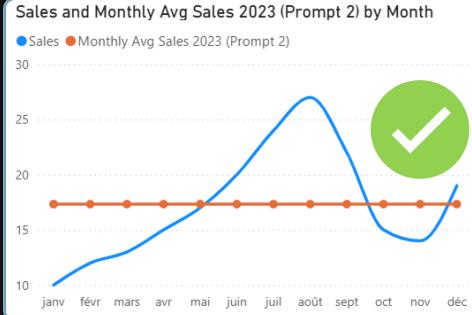
I need a DAX measure that calculates the average monthly sales for 2023. Here is my data structure:

- Table: Fact_Sales
- Sales Column: Value
- Date Column: DimDate[Month]
- The measure should display the total annual average for each month.

```
Monthly Avg Sales 2023 (Prompt 2) =  
CALCULATE(  
    DIVIDE(  
        SUM(Fact_Sales[Value]),  
        DISTINCTCOUNT(DimDate[Month])  
    ),  
    YEAR(DimDate[Date]) = 2023  
)
```

17

Monthly Avg Sales 2023 (Prompt 2)



Go in the [Patou Tips GitHub](#) (link in page 2) to see the results in the PowerBI file named "Example for MCP Server with measures.pbix".

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Patou Tips #57

28

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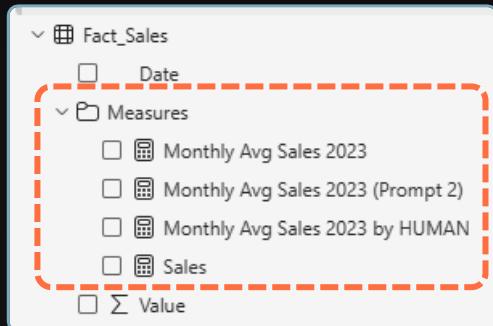


Step 6: Create a folder of measures

Prompt

Can you connect to the PowerBI file opened and named "Example for MCP Server with measures" and do the following steps:

- 1 - Create a folder named "Measures"
- 2 - Put all the measures inside the folder
- 3 - Place the folder named "Measures" outside of a table, at the root of the folders.



The "measures" folder is created and all measures are stored there. It is not possible (see Claude answer below) to create a "measures" folder outside of tables (point 3 of the prompt).

You should now see a "Measures" folder in the Fields pane of Power BI Desktop containing all four measures, organized separately from the table structure. The measures are still technically part of the Fact_Sales table (as they must belong to a table in the data model), but they're displayed in a separate "Measures" folder for better organization.

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29

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Prepar a PowerBI project using AI



Summary:

Creating a Power BI project with the help of AI (1/2)

Step	Command	Result	Comment
Insert the graphic color guide	Prompt + JSON file	🔴 Not possible	AI works only with the semantic model
Create a date dimension table	Prompt + TDML script	🟡 Almost perfect	Verification required. It might be faster to do it directly in Power BI via TDML view. (cf. Patou Tips #52)
Connect to an API and create queries in PowerQuery	Prompt	🟢 Perfect	Modification of the M code if a token is required (see part 2)
Create a sales fact table	Prompt (very very detailed)	🟢 Perfect	Verification required (see part 3)
Establish the relationship between 2 tables	Prompt	🟢 Perfect	It might be faster to do it directly in Power BI (see part 3)

Power BI project with AI

Prepar a PowerBI project using AI



Summary:

Creating a Power BI project with the help of AI (2/2)

Step	Command	Result	Comment
Create folder of measures	Prompt	<input checked="" type="checkbox"/> Almost perfect	It seems that placing the folder in the root directory is not possible (see part 3).
Create DAX measures	Prompt (very detailed)	<input checked="" type="checkbox"/> Perfect	Verification required, also with context (see part 3).
Additional information: Claude AI is available for free for approximately 2 to 3 requests per day. For more extensive use, a paid subscription is required.			

Coming soon, in 2026!



Patrice Fayard

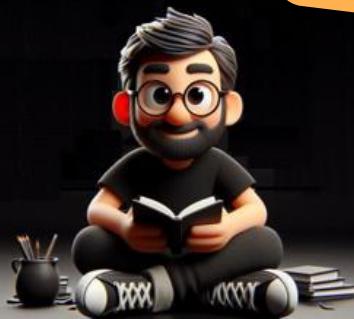
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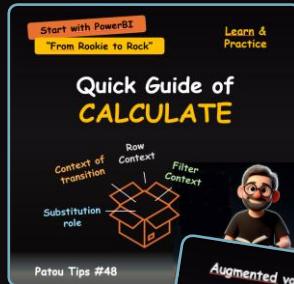
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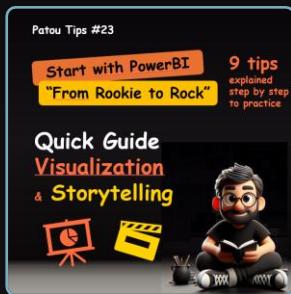
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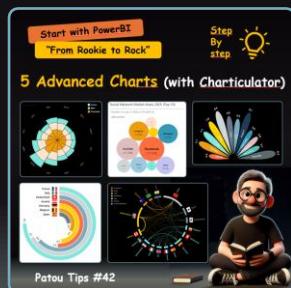
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Patou Tips

Don't forget!

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