

Documentation CBI Focus Planner (Editor)

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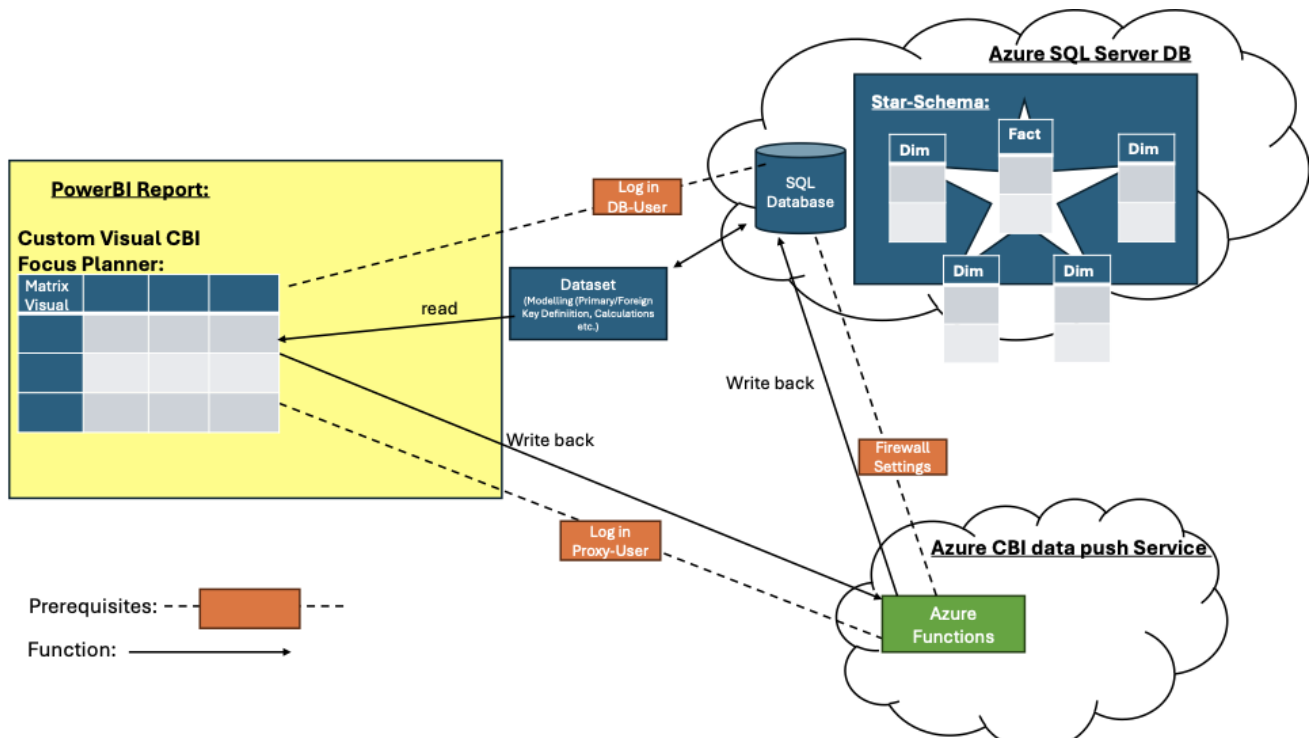
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1. Prerequisites



1.1 Cloud/Network (Firewall Settings)

CBI Focus Planner is a custom visual that provides a matrix visual in Power BI. The visual interacts with the tenants Azure cloud database to support company-related planning tasks. The CBI Focus planner uses Azure Functions as interface to the Azure Cloud Database. Azure Functions are a so-called compute-platform that can run code units created by us. Azure functions help to control the infrastructure within the Azure SQL Server Cloud and also perform computational tasks there. In this way, Azure functions ensure that proper changes are made to the database.

However, since the user's SQL database and the Azure functions are located in two different Azure clouds, a connection between these two clouds must be established in order for the user to use the Azure functions of the CBI Focus Planner.

To do this, the SQL database must allow the Azure Cloud of the Azure functions to access its database. This can be set up in the firewall settings in the Azure Portal. To find this, the user must first login to the Azure Portal that they created the Azure SQL database. They then need to search for "SQL databases" in the search bar and select the SQL database they want to use for their report. Then click > "Overview" > "Set server firewall".

Finally, at the bottom of the page, under the term “exceptions”, the user will find the field “Allow Azure services and resources to access this server”, which they must now confirm.

Exceptions

Allow Azure services and resources to access this server ⓘ

Save

Discard

If users mistrust these firewall settings, it is possible to gain access to the Azure function in another way. Instead of allowing all Azure services and resources to have access, the alternative would be to select which Users have access.

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


To do this manually, download the Jason file with public addresses of Power Bi servers of each region. The Jason file is available for free on the Microsoft platform.
 (Here the link: <https://www.microsoft.com/en-us/download/details.aspx?id=56519>).

```

4      "values": [
94868    {
94897    },
94898    {
94899      "name": "PowerBI.WestEurope",
94900      "id": "PowerBI.WestEurope",
94901      "properties": {
94902        "changeNumber": 1,
94903        "region": "westeurope",
94904        "regionId": 18,
94905        "platform": "Azure",
94906        "systemService": "PowerBI",
94907        "addressPrefixes": [
94908          "20.50.0.0/24",
94909          "20.86.93.192/28",
94910          "20.86.93.208/29",
94911          "20.105.209.128/25",
94912          "40.74.24.70/31",
94913          "40.74.30.128/29",
94914          "40.74.30.160/27",
94915          "40.74.30.192/26",
94916          "40.74.31.0/26",
94917          "68.219.160.0/25",
94918          "74.178.240.160/28",
94919          "172.201.237.0/30",
94920          "172.211.114.96/28",
94921          "172.211.127.128/26",
94922          "2603:1020:206:/122",
94923          "2603:1020:206:40/123",
94924          "2603:1020:206:1:5e0/123",
94925          "2603:1020:206:1:600/122"
94926        ],
94927        "networkFeatures": [
94928          "API",
94929          "NSG",
94930          "UDR",
94931          "FW"
94932        ]
94933      }
94934    ],
  
```

The different server addresses are in one big Jason file and each region provides multiple addresses. Next, addresses of the Power BI region need to be entered in Microsoft Azure Firewall Settings as well as the addresses of the user devices and the address of the CBI Focus Planner Backend, that manages the Azure functions. **The "CBI Focus Planner Backend" Azure Cloud has the IP4 address: 72.144.61.235.**

+ Add your client IPv4 address (84.56.81.118) + Add a firewall rule

Rule name ↑	Start IPv4 address	End IPv4 address	
CBI Focus Planner Backend	72.144.61.235	72.144.61.235	
Power BI service 01	20.50.0.0	20.50.0.255	
Power BI service 02	20.86.93.192	20.86.93.207	
Power BI service 03	20.86.93.208	20.86.93.215	
Power BI service 04	20.105.209.128	20.105.209.255	
Power BI service 05	40.74.24.70	40.74.24.71	
Power BI service 06	40.74.30.128	40.74.30.135	
Power BI service 07	40.74.30.160	40.74.30.191	
Power BI service 08	40.74.30.192	40.74.30.255	
Power BI service 09	40.74.31.0	40.74.31.63	
Power BI service 10	68.219.160.0	68.219.160.127	
Power BI service 11	74.178.240.160	74.178.240.175	
Power BI service 12	172.201.237.92	172.201.237.95	
Power BI service 13	172.211.114.96	172.211.114.111	
Power BI service 14	172.211.127.128	172.211.127.191	
Laptop 1	165.234.064.23	165.234.064.23	

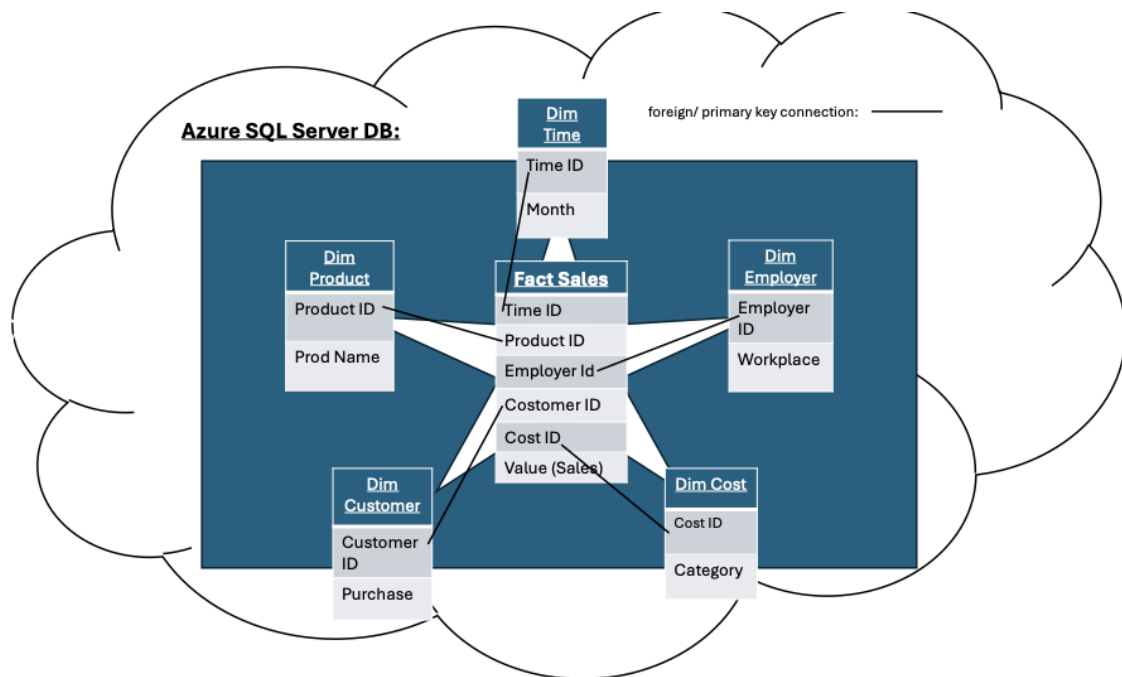
1.2. SQL-Server Database

SQL-Server databases can be set up within the Azure cloud to store, manage and access data. An essential criterion for using CBI Focus Planner is the organizational structure of the data. The required structure is the so-called star schema, which is explained in the following.

1.2.1 Star schema

The star schema is a way of structuring data models and is typically used with large amounts of data to construct more efficient SQL queries and precise analysis. This allows users to build simpler queries at higher query speeds to facilitate the creation of visualizations, reports, and dashboards. The star schema also makes the information easier to understand, allowing each user and end user to absorb the most important information in a short amount of time. It also provides the flexibility to design analyses from different perspectives by presenting facts using different dimensional tables.

1.2.2. Fact and dimension tables



As the name suggests, a star schema is structured like a star. The middle part of the star, the "center" of the star, is formed by the fact table, which contains the essential data. This data is called facts because it is the foundation of the presentation, which contains the important information. The link from the fact table to each dimension table is established by a foreign key in the fact table and a primary key in the dimension table.

A dimension table, on the other hand, describes a perspective on the fact table and is therefore based on the facts from this table. They allow us to get a broader view, identify relationships, and display their importance. Dimension tables each have a primary key that links them to the fact table. This primary key must have the same values as the foreign key in the fact table to create these links.

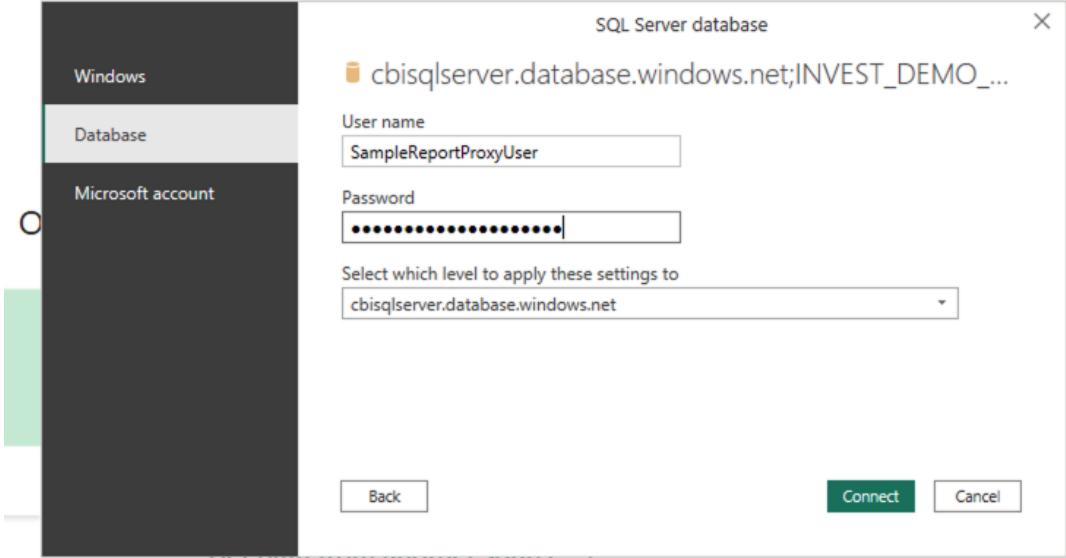
1.2.3 User model

SQL-Server provides tiered access management, which assigns users to specific roles that allow them to access only defined data. This contributes to data security and reinforces the trustworthiness of the database.

The user model describes how users can access and interact with data to run queries for reporting and analysis. In this context, user roles define who can access which data and to what extent it can be manipulated.

For this reason, CBI Focus Planner distinguishes between two types of users. These two users are understood as technical users and are also SQL Users. On the one hand, there is the DB (database) user, who creates the database on the SQL server and manages it. The DB user creates with this database a dataset and uses the CBI Focus Planner to build the Power BI report. For connecting the database with Power BI and creating a report, the report editor must log in with the DB user. Once the editor or planner is logged in with the proxy user, he can

manage the rights for the writeback function. Therefore he is also able to use the writeback-function.



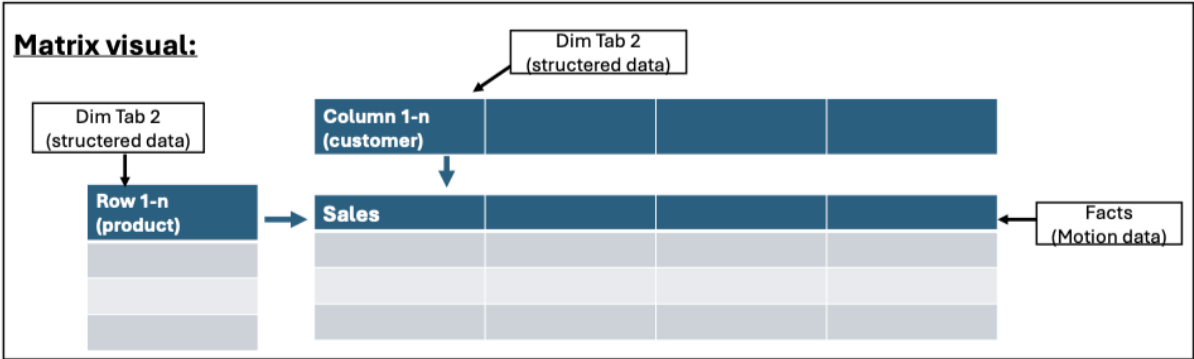
On the other hand, there is the proxy user that gets rights from the DB user to writeback data and save them in an appropriate way.

At the end of this chapter, it is important to mention that other requirements for uploading the SQL database are explained in chapter 3.2, where it is explained how report editors have to set up their SQL database in Power BI for using the Custom Visual Focus Planner.

2. Custom Visual Focus Planner

This chapter will now explain the function of the Custom Visual Focus Planner. Since the Custom Visual Focus Planner is based on the Matrix Visual, this chapter will first discuss the Matrix Visual in order to explain the functions of the Custom Visual Focus Planner in more detail.

2.1 Matrix Visual



The matrix Visual is used to map multiple dimensional tables to clearly display complex data sets, allowing simultaneous analysis of different data. It displays information from the fact table that

meets the requirements of the dimension table, while filtering the data and describing it in more detail.

A prerequisite for the matrix visual is that the dimension tables are linked to the fact table by a relationship so that the data is assigned correctly. New calculations can also be performed in the Matrix Visual to obtain new information, such as the average or the sum and furthermore. Minimum and maximum values can also be calculated and highlighted. It is also possible to format individual cells by changing the background color, font, font size, and font color. The matrix visual supports clarity by showing and hiding different rows and with the drill-up and drill-down functions.

Drill-up and drill-down provide the user with an increasingly detailed picture of the information. The visual first displays the higher level (e.g., year), and the drill-down feature allows the user to go to the next lower level (e.g., month). Drill-up allows the user to return to the overview with the next higher level.

The matrix visual is also interactive, as cells are focused as soon as they are selected.

Month Products_Lv2	January		February		March		April		May		June		July	
	Min of Gross	Min of Yield	Min of Gross	Min of Yield	Min of Gross	Min of Yield	Min of Gross	Min of Yield	Min of Gross	Min of Yield	Min of Gross	Min of Yield	Min of Gross	Min of Yield
Public Fund														
Alternative Investment Fund	588.70	36.30	392.47	24.20	588.70	36.30	588.70	36.30	230.57	16.80	392.47	28.60	3,004.8	
Capital Protected Fund	588.70	42.90	7,064.40	435.60	11,289.70	696.14	8,407.83	518.44	9,623.32	593.39	9,811.67	605.00	3,335.5	
Equity Fund	196.23	12.10	0.00	0.00	0.00	0.00	196.23	12.10	0.00	0.00	196.23	12.10	196.2	
Hybrid Fund	196.23	14.30	588.70	42.90	196.23	14.30	196.23	12.10	196.23	14.30	392.47	28.60	196.2	
Life Cycle Fund	196.23	12.10	196.23	14.30	196.23	12.10	196.23	14.30	196.23	12.10	0.00	0.00	196.2	
Mixed Fund	0.00	0.00	0.00	0.00	0.00	0.00	196.23	12.10	0.00	0.00	196.23	12.10	0.0	
Money Market Fund	1,569.87	96.80	392.47	24.20	2,943.50	181.50	196.23	12.10	392.47	28.60	196.23	12.10	588.7	
Other Securities Fund	4,317.13	314.60	2,275.57	165.83	2,872.64	177.13	1,494.13	108.88	1,569.87	96.80	784.93	48.40	1,861.4	
Pension Fund	0.00	0.00	0.00	0.00	196.23	12.10	0.00	0.00	196.23	12.10	0.00	0.00	196.2	
Target Fund	196.23	12.10	588.70	36.30	196.23	12.10	196.23	12.10	1,984.01	122.34	196.23	12.10	588.7	

The Custom Visual Focus Planner displays the information in a matrix but also has some differences from the matrix visual.

Regarding the relationships of the dimension tables to the fact table for the CBI Focus Planner, it was already mentioned in chapter 1.2.2 that the star schema is required. However, another requirement for using the Custom Visual Focus planner is that each dimension table that has a relationship to the fact table must be used.

As in the Matrix Visual, values can be calculated and highlighted, which works in the same way. Instead of the Drill-Up and Drill-Down functions, the alternative sets up filters that can take a specific value. (e.g. January in the attribute Month)

The most important feature in Custom Visual Planner is the Writeback function, which makes the Visual Planner unique. This function allows the user to manipulate data in the matrix table, which also affects other values, as they are dependent on each other through their relationships. This makes planning easier as the corresponding constraints can be calculated for the desired results.

This feature supports the interactivity of the visual even more and uses the practical features of the matrix visual, so that the handling of the custom visual Focus planner and handling of the matrix visual hardly differ.

2.2 Role model in Custom Visual Focus Planner

In the Custom Visual Focus Planner there are many possible ways to distribute access and writeback rights. This part of the documentation will address the limitations of this distribution. As mentioned in chapter 1.2.3 Custom Visual needs two SQL Server users, the Proxy user and the DB user. These users are technical users, who are associated with certain rights. Every user is assigned by the database designer to a specific data role, which enables the user to certain rights. A user could be a Windows user or an SQL Server user, who has different ways to gain access to the writeback-function.

However, in reality we assume that there are different editors who create the report and its dataset and different planners, who mainly interact with the Custom Visual Focus Planner. In that case **editors** and **planners** are categories of data roles. While editors also manage the database and assign access rights to others, each planner neither has permission nor can he design the report.

These two roles summarize the function and possible distributions of technical users. To get a good example of this, below is an overview of how the users can be assigned to the roles.

	Proxy user	DB user
Editor	<ul style="list-style-type: none">• Create report• Manipulate values• Give access for writeback function	<ul style="list-style-type: none">• Manage database• Create dataset• Manage access rights• Manipulate values• Create report
Planner	<ul style="list-style-type: none">• Manipulate Values	—

3. Operating as Editor

3.1. License model (Free/ Payed)

To get a better overview about possible versions and their availability, please visit the Microsoft AppSource Website to gain more information.

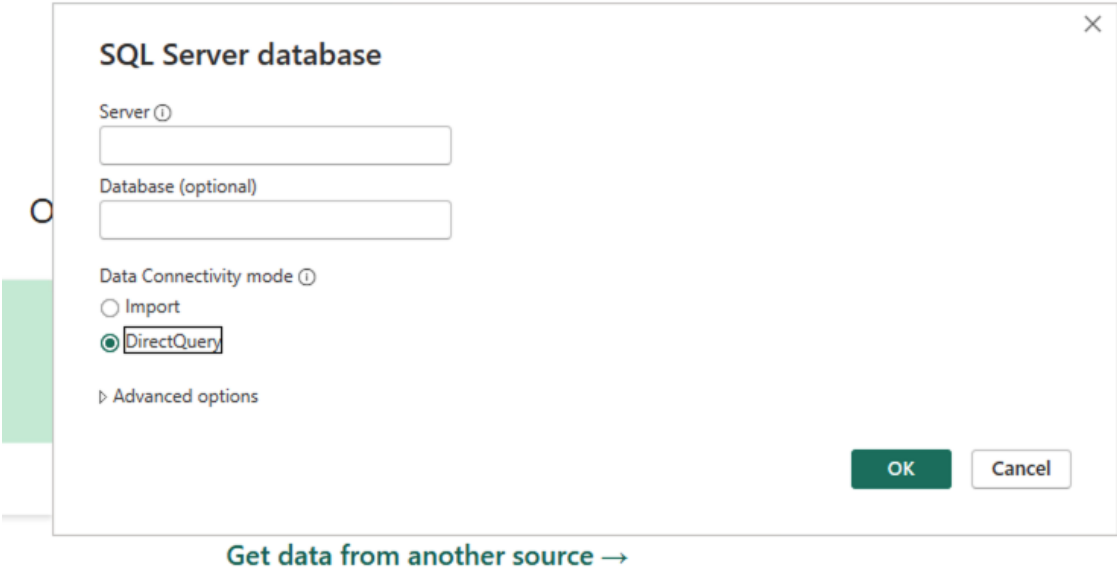
[Link for CBI Focus Planner:](#)

3.2. Connecting to database and establishing relations

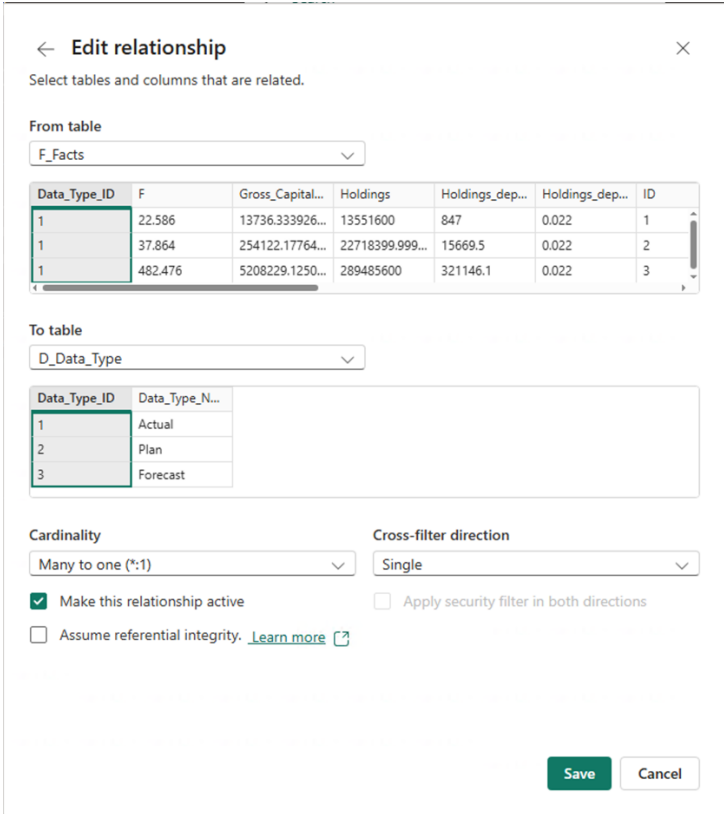
An important aspect for the connection of the database with the Custom Visual Focus Planner is the connector, which is used to access external data sources that are needed to create reports in Power BI.

In the case of the CBI Focus Planner the “Direct Query”, which gives users control and flexibility over the data they receive, is required. The data is transferred and queried in real time, so it is

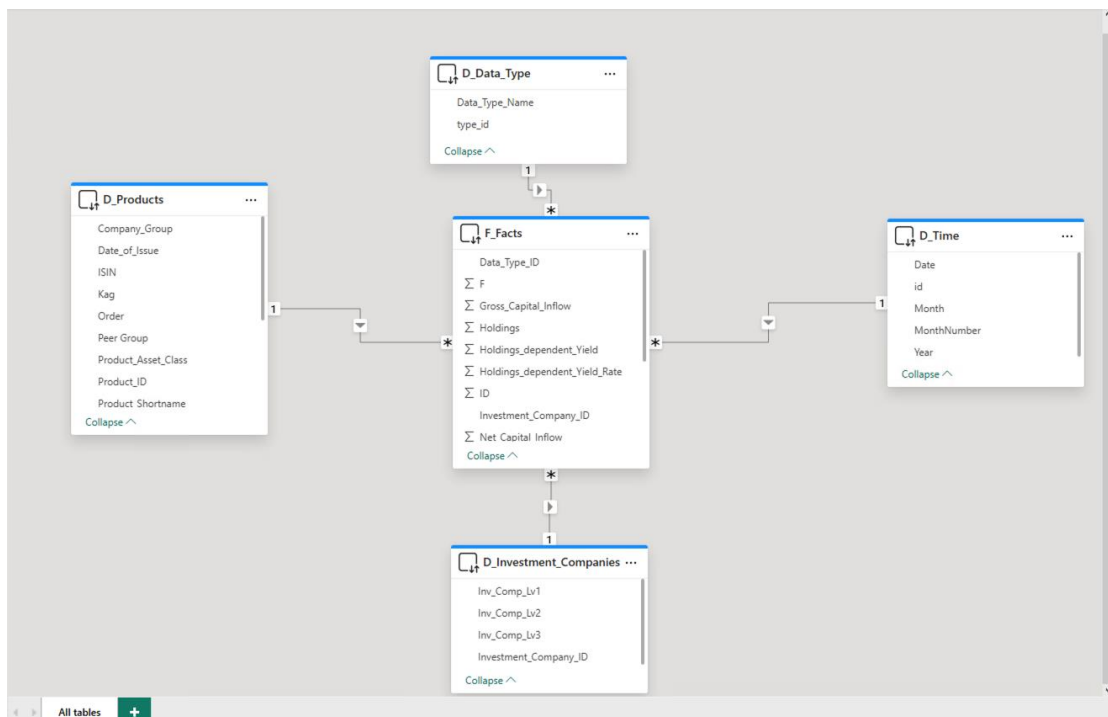
always up to date, which is essential for CBI Focus Planner. This can be configured when uploading the SQL database.



Once the dataset is uploaded to Power BI, a star schema must be created. To do this, you will need to redefine the relationships in the Model View under Manage Relationships. While a foreign key is determined for the fact table, a primary key must be selected for the dimension table.



If all the required dimension tables are now linked to the fact table, a star schema should be created.

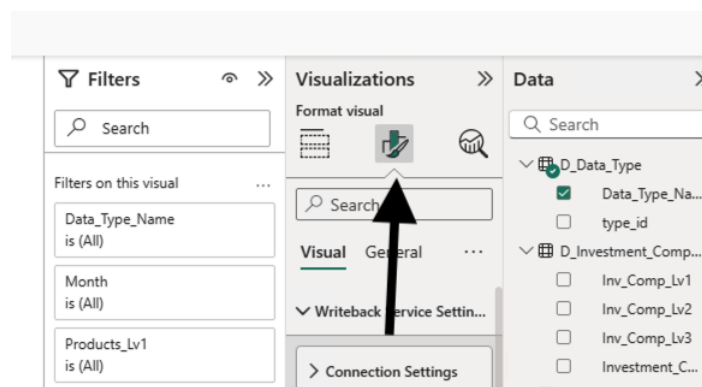


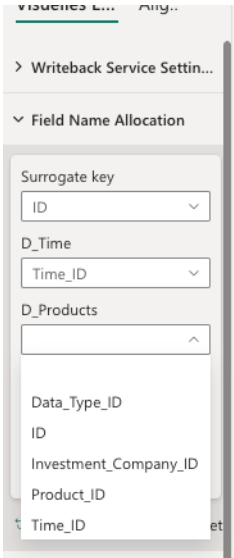
3.3. Visualizing

The next step would now be to visualize the desired data. To do this, the CBI Focus Planner must be added, which is possible via “Get more Visuals”. As soon as the custom visual is available for the report, data can now also be displayed. However, further conditions must be met in order to use the writeback function.

3.3.1. Adding data with fact and dimension tables

So that the Planner to recognize which relationships are present in the star schema, it is not enough to create a star schema. Each primary/foreign must be specified in “Field Name Allocation” again. These are found under “Visualizations” > “Format your visual”.

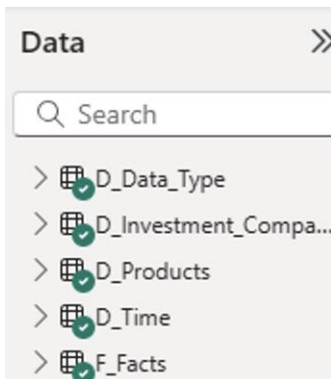
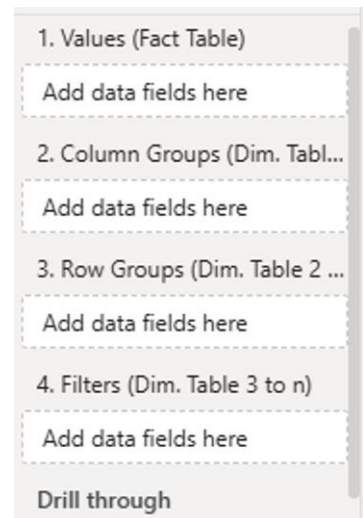




Now the panel “Field Name Allocation” should be visible under “Visual” and after opening it, a key has to be specified for each dimension table. Each dimension table will have a selection of foreign key from the fact table. It is important that each table get their correct key assigned, so that the CBI Focus Planner can detect how each dimension table is connected to the fact table.

As mentioned in chapter 2.2 “Matrix Visual”, the relevant information is described by the dimension tables from Column Groups and Row Groups. Several attributes can be added to each group. The decisive factor is that only information from the facts table really appears in

“1. Values” and dimension tables either in “2. Column Groups”, “3. Row Groups” or “4. Filters”. These can be found under Build Visual.

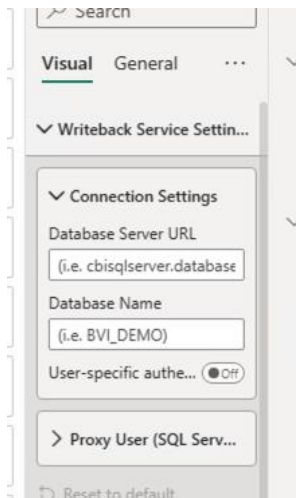


It should also be noted that an attribute must be used from each table in the star schema for the writeback function to work. The green check marks under "Data" confirm that each table is displayed in the custom visual and that no errors occur.

3.3.2. Add Database User for Writeback

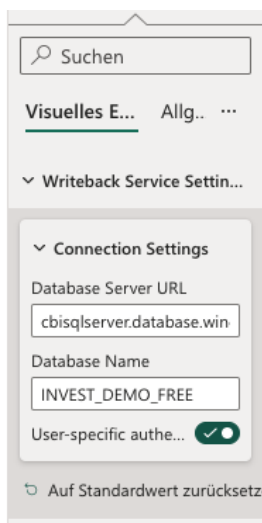
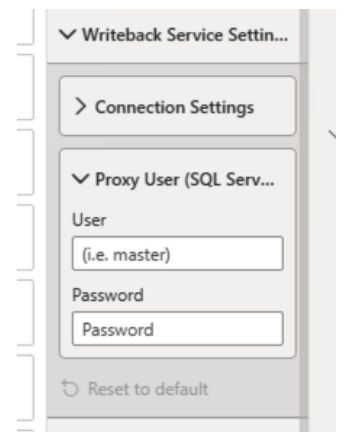
With the steps that have been taken so far, it is now possible to create a report that resembles a Matrix Visual. However, for using the special writeback function of the CBI Custom Visual, both the database and the proxy user must be stored.

Before the proxy- user logs in the editor must first define the SQL database to be written back to. To do this, select "Visualizations" > "Format your visual".



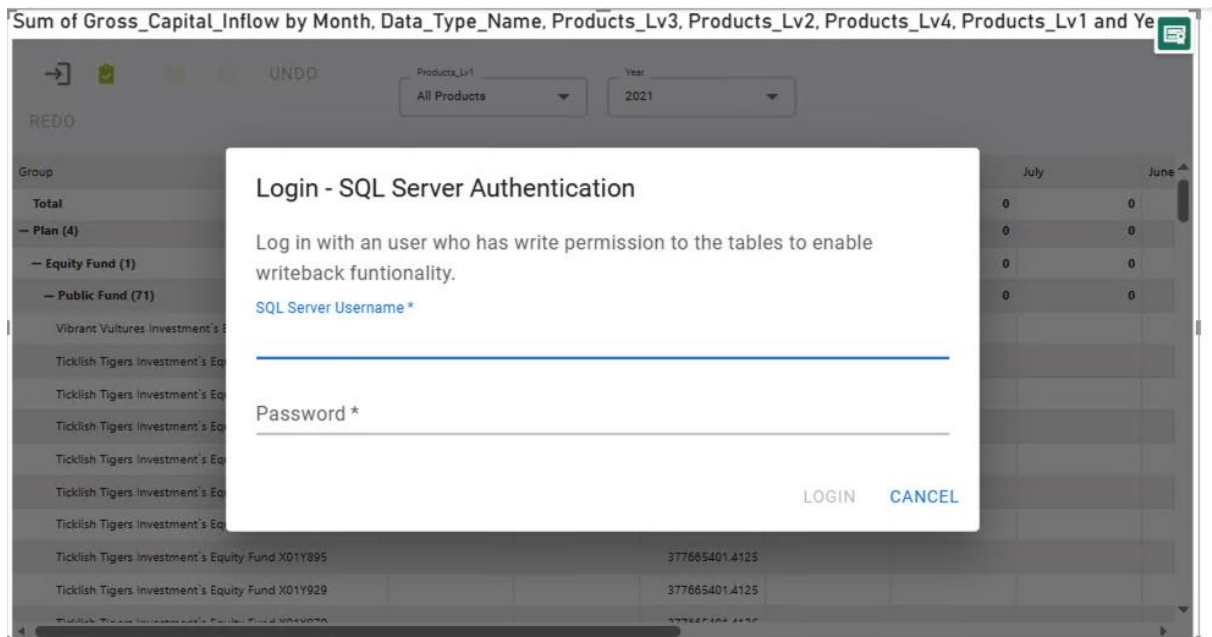
The editor then enters the database server URL and the database name in the lines given under “Connection Settings” in the “Writeback Service Settings”, as when uploading the SQL database.

One way to activate the writeback-function is via Proxy-User. The Proxy- User can log in under “Proxy User”. The DB user could also log in again here if it is desired that also this user has access to the Writeback function.

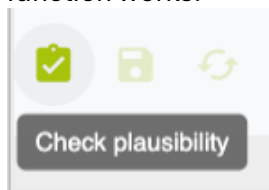


It is also possible to differ between different SQL server users, that use the writeback function. So that every user can log in with their SQL Server user, the slice toggle “User specific authentication” below the field “Database Name” must be set.

Then in the main frame appears a log in field for every user, who wants to use the custom visuals writeback-function. After the user has entered his login data, he can begin to work with our custom visual.



If editors edit the Custom Visual a button called “Check plausibility” will appear in the Visual. It informs the editor if the Focus Planner is connected to the SQL Server, so that the writeback function works.



The difference between the login as a Proxy user and the login as SQL Server user is on the one hand the anonymity, because multiple users share the same log in data and can edit the report in the same way when using the proxy user. In contrary SQL server users can be distinguished. The proxy user login also authorizes all users with the same conditions, while the window user login distinguishes between users, who get different rights from the database designer assigned.

3.3.3 CV Focus Planner ´s formatting options

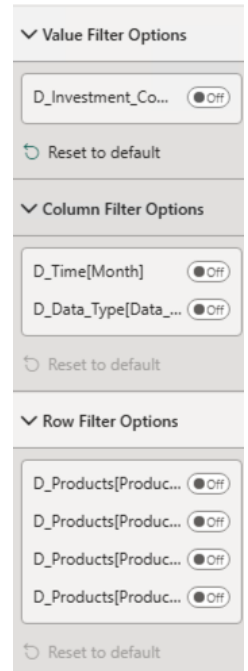
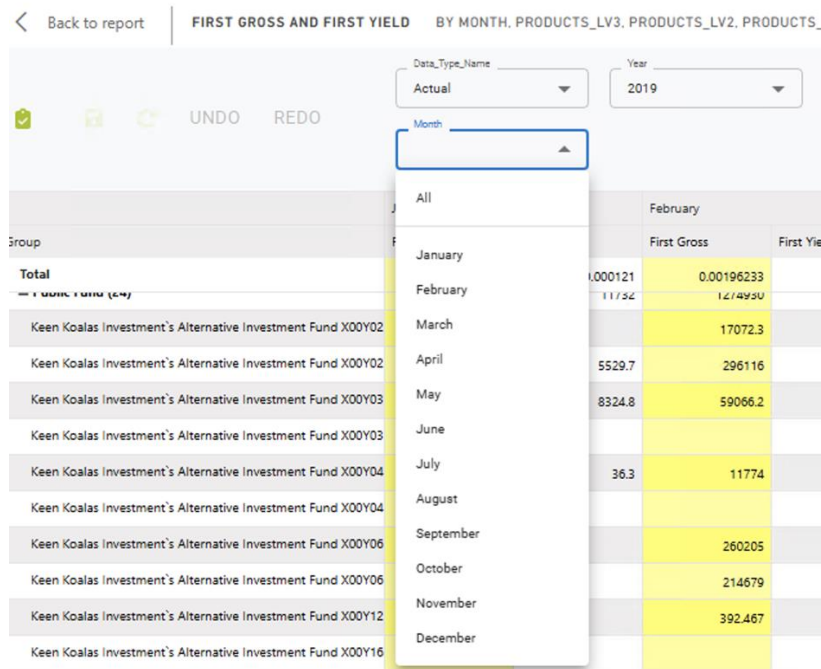
The Custom Visual Focus Planner has various types for simplifying the handling of the Custom Visual and enables the creator to mark or protect specific cells.

Since many features of the Custom Visual Focus Planner are similar to the features of the Matrix – Visual, only the Focus Planner features, which differ from the features from the Matrix – Visual, are explained in this chapter.

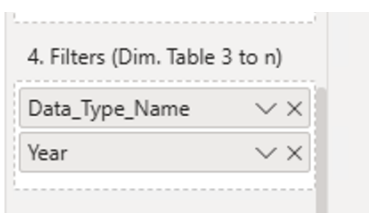
3.3.3.1 Filters

For helping the user to find data with specific key data, the Focus Planner offers filter function visual for attributes that are used in the Custom Visual. These Functions are found under "Visual" from "Format visual" like the "Writeback Service Settings" from the chapter before. There are "Value Filter Options", "Row Filter Options" and "Column Filter Options", which have slide toggles for the dimension tables that are selected in the Custom visual.

When one toggle is set in the filter settings of "Value Filter Options", "Column Filter Options" or "Row Filter Options", a slicer appears in the Custom Visual and possesses values of the attribute from the entered attribute. This slicer has only elements that are set in the filter next to the formatting pane and can be used by the end user to filter data corresponding desired data.



An important difference that separates the Value Filter from the other two options is that the other two options allow you to select multiple items, while the Value Filter allows you to select only one. This allows the editor to provide an even more secure and flexible way to protect data. If the user needs a filter with key data that should not be visualized on the Custom Visual, he needs to put this attribute to "4. Filters (Dim. Table 3 to n)" under "build visual" from "Visualizations". These attributes will then be listed under "Values Filter Options" and can be activated using the slice toggle.

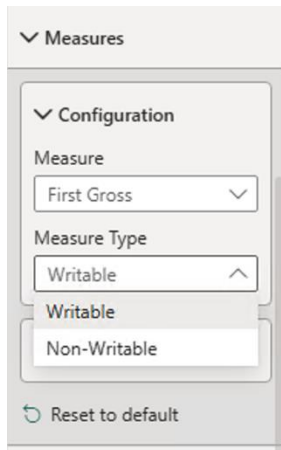


Custom Visual Focus Planner uses its own filters because the filters provided by Power BI calculate the total by summing the given data. Focus Planner's filters still calculate the total with given and hidden data, so the planning is more realistic.

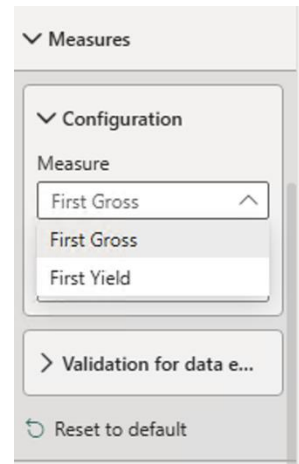
3.3.3.2 set writable and non-writable cells

For limiting the Writeback-function and for protecting data and cells, CV Focus Planner offers the “Measures” feature. It determines which columns of the fact table can be overwritten in the visual and which cannot. Only columns that are used in the Custom Visual can be edited.

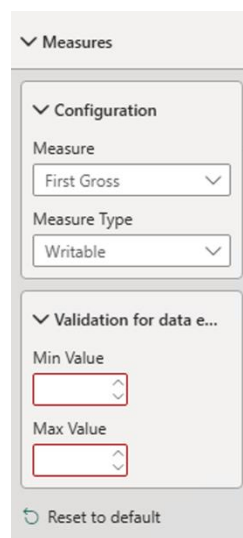
Matrix Visual:



CV Focus Planner:



If the editor decides that a column is writable, he can also set the minimum and maximum value of those cells that can be written by the end user when using the write-back function.



3.3.3.3 Formatting

To format the Custom Visual, the Focus Planner is equipped with similar features as the Matrix Visual. Only editors can edit the grid, font, cell background colors or text colors. Row headers and column headers can also be edited as the editor wishes.

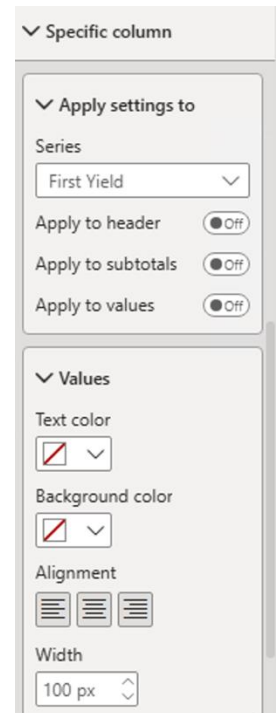
> Grid
> Values
> Column headers
> Row headers

These formatting options are also available in the Matrix Visual and work in much the same way.

An important difference is the separation of editable and non-editable cells in the "Values" formatting option, so that CV Focus Planner end users can distinguish between overwritable and non-overwritable cells. Also, unlike the Matrix Visual, the Focus Planner cannot display values in groups of rows instead of columns. Otherwise, the formatting is the same.

(To learn more about the formatting settings of the Matrix visual, click the following [link](#).)

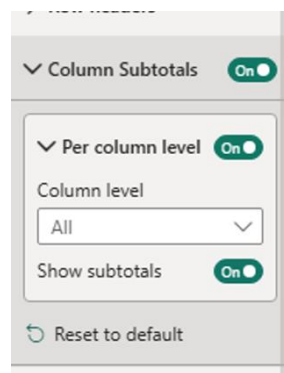
Matrix Visual supports formatting of different components of a fact table value. Formatting settings can be set for headers, subtotals, totals and values. The CV Focus Planner has also adopted this, but only supports header, subtotal and values, as it does not display a total. These settings are under Specific Column.



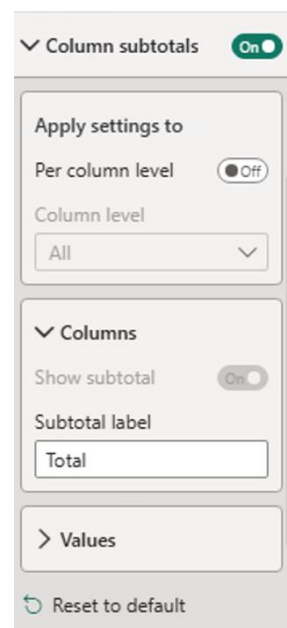
3.3.3.4 Subtotals

In the Matrix Visual, "Row Subtotals" and "Column Subtotals" can be shown to display or hide partial results for columns. However, only "Column Subtotal" is available in the CV Focus Planner, which also cannot be edited in the same way as in the Matrix Visual. While it is possible to format this subtotal in the Matrix Visual, the "Column Subtotal" can only be on or off in the CV Focus Planner.

CV Focus Planner:



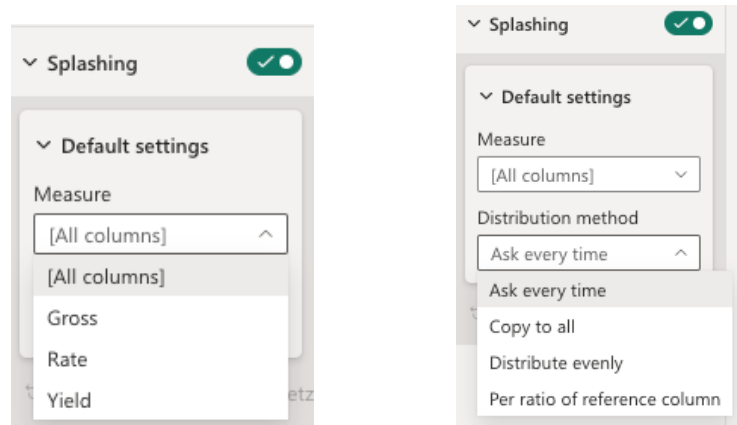
Matrix Visual:



The column level settings for adding subtotals in the CV Focus Planner are identical to those in Matrix Visual.

3.3.3.5 Splashing

An important feature of the Custom Visual Focus Planner is the Splashing that calculates new values for a node. The individual calculations are explained in chapter 4.3.2 Splashing can be turned off or on by the editor, so that end-users/planners cannot directly change node values, but only affect them by changing leaf values. Editors decide if these splashing calculations are requested on specific columns or restrict certain columns with a calculation.



3.3.3.6 Code formatting

Custom Visual Focus Planner supports also code formatting, which is similar to code formatting from excel. As Power Bi uses a different form of code, the following link describes how to use these codes. [Code format.](#)

4. Support/ Services/ Manuals

4.1 Testversion

To get to know the Visual better, a trial version is available on Microsoft AppSource. It includes a sample database and report designed with CBI Focus Planner and is available for free download.

Link:

4.2. L Runtime environment (Desktop/ Cloud/ Mobile)

The Custom Visual Focus Planner supports Power Bi desktop clients and Power BI browser clients on Chromium.

Here is a short list of Chromium browsers: **Google Chrome**, **Microsoft Edge**, Brave, Opera, **Vivaldi**, Samsung Internet (Beta), Samsung Internet (Beta). In addition to them Safari is also possible.

An adapted mobile version of the Custom Visual for smartphones is not available. It is not possible to export the whole data from the Customer Visual report to a PDF.