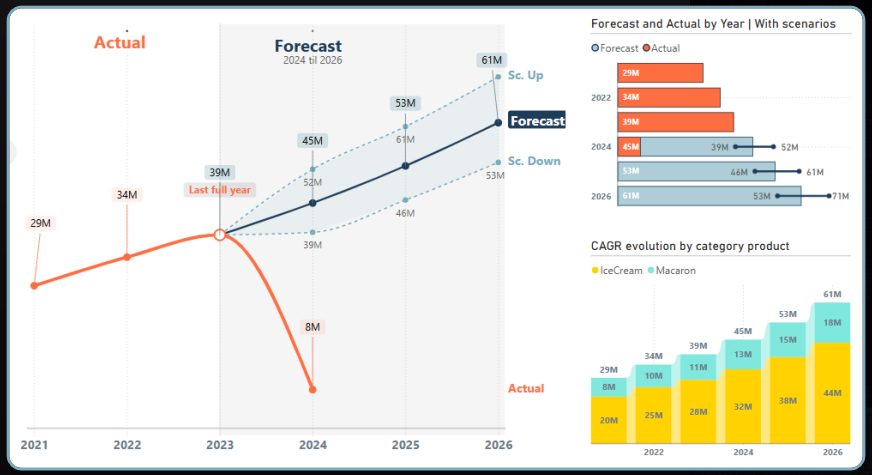
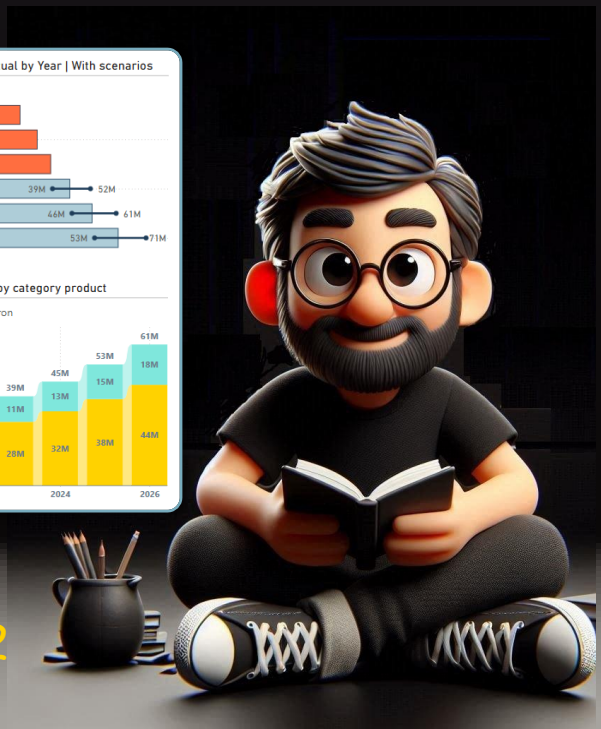
Use case with PowerBI

"Finance Toolbox"

FREE
PowerBI pbix
to practice

Performance of an investment (with CAGR)





Patou Tips #30 ▶ Toolbox #2

About this Toolbox and datas...

1. **Try the version online**
   Toolbox #2 PowerBI online

2. **Practice**
   Find all the resources on the Patou Tips GitHub
   Link GitHub to resources Toolbox #2

3. Or directly on the project from the "**GitHub button**" at project top left.

Use case with PowerBI

"Finance Toolbox"

Performance of an investment (with CAGR)

About this Toolbox and datas…

The dataset comes from the fictitious Parisian company "IceCream' Macaron," taken from my book "Financial Forecast with PowerBI: Story of a Point."

In this Toolbox, we want to project sales in the future by generating forecast with the CAGR method

Learn more with my book "Story of a Point" Financial forecast with PowerBi (available in dec 2025).

Use case with PowerBI

"Finance Toolbox"

Performance of an investment (with CAGR)

Use case with PowerBI

"Finance Toolbox"

Performance of an investment (with CAGR)

1. When and how to use CAGR method?
2. How it works?
3. About modeling…
4. About DAX measures…
5. About visualizations…

1 When and how to use CAGR method? Features of this forecast (1/2)

The CAGR (Compound Annual Growth Rate) is a financial concepts used to estimate the performance of an investment or finally like in the toolbox, the performance of sales.

Typical applications	• Strategic Plan: Many companies need to have a long-term vision, to reassure their shareholders for example, especially for big Firms • Currency growth rate
General type	Time Series Analysis
Drivers used (1)	Intensity
Data required (Reference period)	A minimum of 3 years of sales history, without seasonality cycles. It could be also 3 others period, such month, days. Please note: A period must be complete. The aggregate total is enough
Projection	3-year forecast. Short terms
Identification of the turning point	Poor
Pros	Simple statistical models

Use case with PowerBI

"Finance Toolbox"

(1) More informatiion with my book about forecast drivers.

Performance of an investment (with CAGR)

1 When and how to use CAGR method?
Features of this forecast (2/2)

Cons	However, it has drawbacks. It does not take into account the ups and downs during the analyzed period. Only the final value and the initial value are taken into account.
Notes	• The CAGR is an average of performance. The average performance over the years is different from the annual average. • The CAGR does not add up! If your performance increases by 30% then by 20%, in the end it does not increase by 50% (30%+20%), but by 26% (1.3*1.2).
Forecast calculations	<u>Step 1: Calculate CAGR rate:</u> CAGR = (End value/Start value)$^{1/n}$ – 1 → with "n" is the number of period <u>Step 2: Calculate Forecast:</u> Revenue Year N+1 = Revenue Year N * (1+CAGR) Revenue Year N+2 = Revenue Year N * (1+CAGR)^2 Revenue Year N+3 = Revenue Year N * (1+CAGR)^3 Revenue Year N+4 = Revenue Year N * (1+CAGR)^4 Revenue Year N+5 = Revenue Year N * (1+CAGR)^5 Note: A 3 years forecast is an acceptable limit ("Revenue Year N+3). Futher away it's more random.

Use case with PowerBI

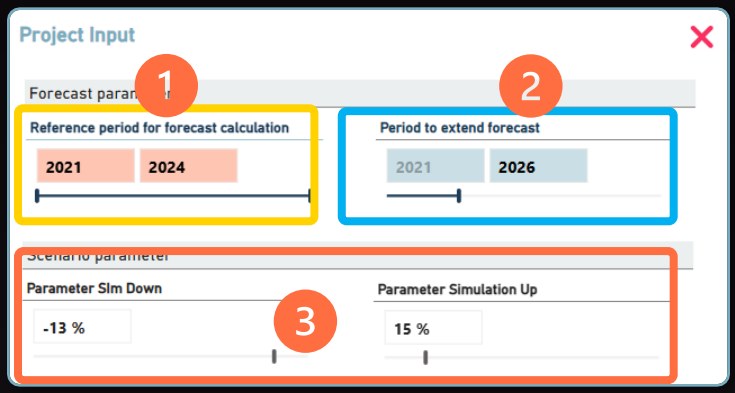
"Finance Toolbox"

Performance of an investment (with CAGR)

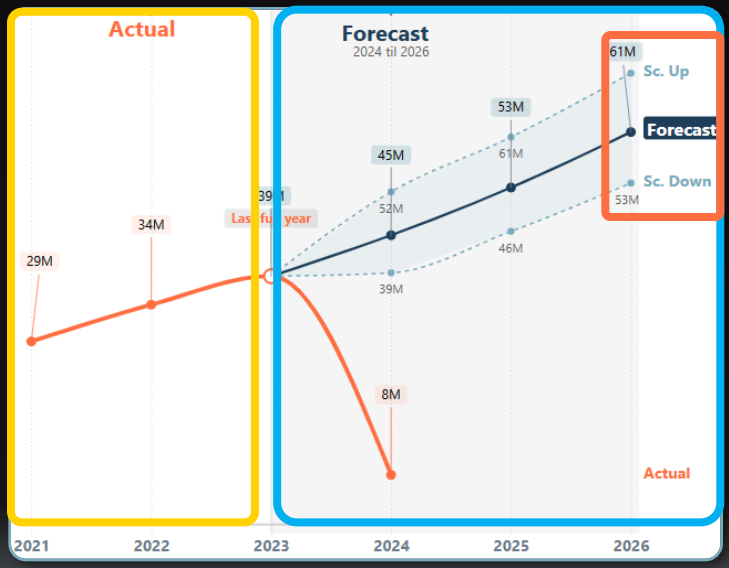
2 How it works?

Change Project Input

The button "Change Project Input" allows you to configure your CAGR simulation



1. Actual period to be considered for calculating the CAGR.
2. Forecast extension period.
3. Scenarios up and down based on the forecast curve.



Use case with PowerBI

"Finance Toolbox"

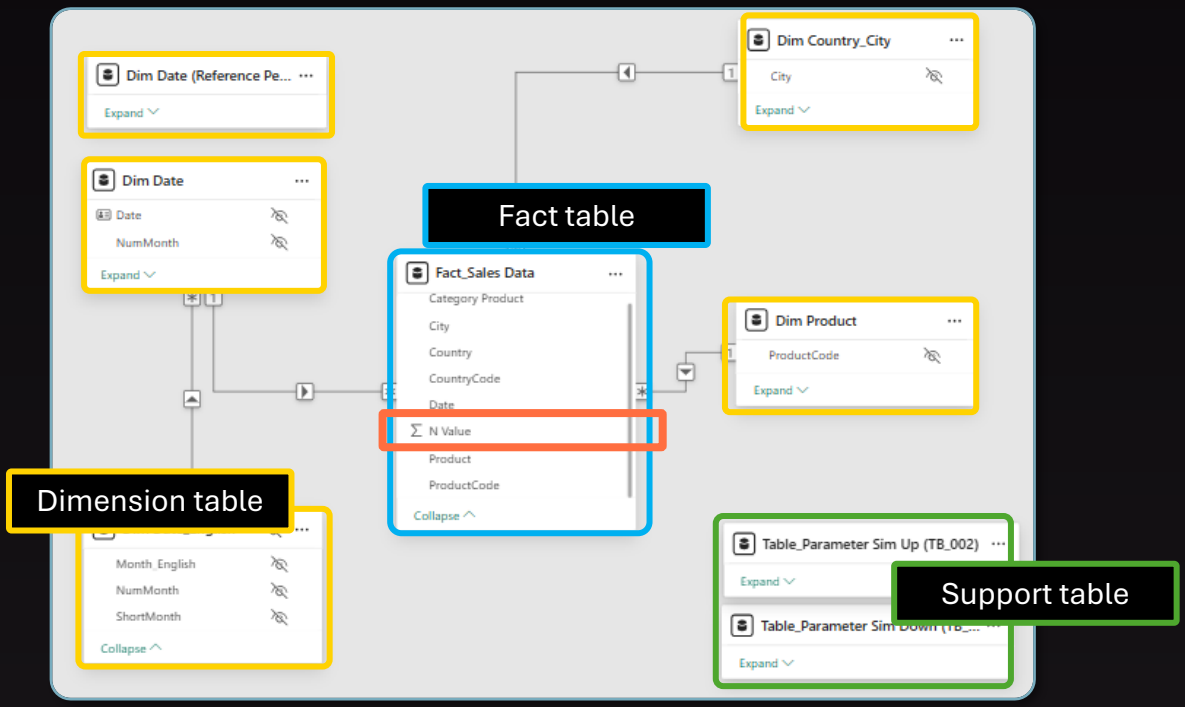
Performance of an investment (with CAGR)

3

About modeling
Main architecture…

Star schema

The "N value"(1) is in the heart of the project!



(1) See Patou Tips # 25 "The complete guide to start with PowerBI" for more information.

Use case with PowerBI

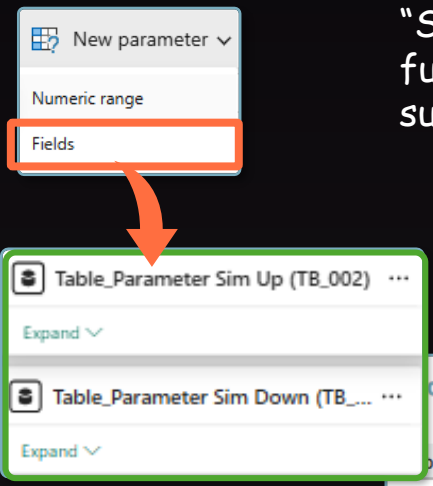
"Finance Toolbox"

Performance of an investment (with CAGR)

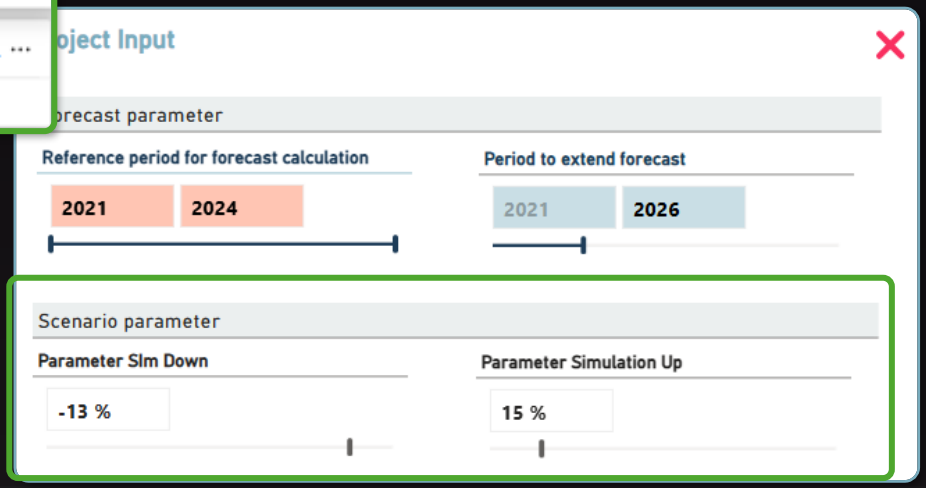
3

About modeling
Main architecture...

About "support tables"



"Support tables" are created by the parameter functionality "fields" to adjust project inputs such scenario parameter.

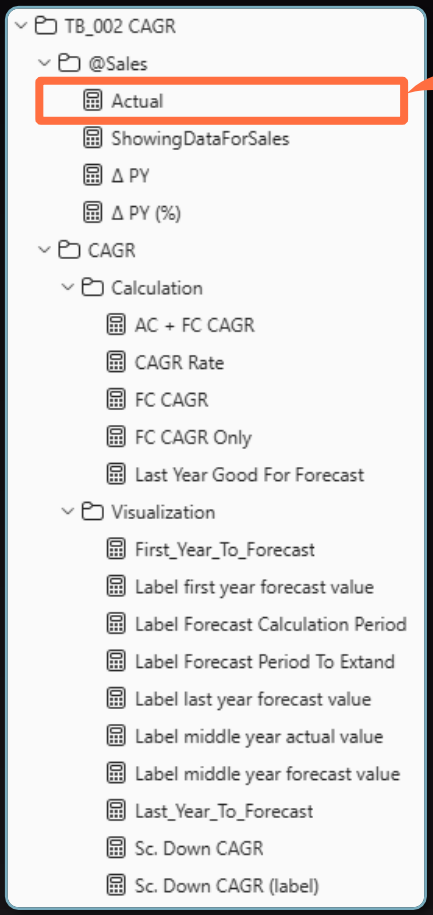


Use case with PowerBI

"Finance Toolbox"

Performance of an investment (with CAGR)

4 About DAX measures…
Measures organization




```
1  Actual =
2  SUM('Fact_Sales Data'[N Value])
```

The sales measure contains the "N Value", this is the pivot measure.

All metrics are organized into two main folders:

- Sales: This folder groups metrics by financial theme.
- CAGR: This folder contains two sub-folders, calculation and visualisation.

Use case with PowerBI

"Finance Toolbox"

Performance of an investment (with CAGR)

4 About DAX measures…
Measure details

« Last Year Good for Forecast » measure

This measure will be very useful for the measure « FC CAGR Calculation » (see next page), and to avoid a bad CAGR simulation.

```
1  Last Year Good For Forecast =
2
3  VAR Last_Year_Reference_Period_Selected =
4  YEAR(CALCULATE(
5          MAX('Dim Date (Reference Period)'[Date]),
6          ALLSELECTED('Dim Date (Reference Period)'[Date])))
7
8  VAR Result =
9  IF(
10     CALCULATE(
11         IF(DISTINCTCOUNT('Fact_Sales Data'[Date]) < 0.8 * DISTINCTCOUNT('Dim Date'[Date]),0,1),
12         'Dim Date'[Year]=Last_Year_Reference_Period_Selected)
13     =0,
14         LASTNONBLANK(all('Dim Date'[Year]),CALCULATE([Actual]))-1,
15         Last_Year_Reference_Period_Selected)
16
17 RETURN Result
```

In line the 11, we check whether each year is full (1) or not (0). To be considered full, the number of days with sales must be equal to at least 80% of all the days of the year.

Use case with PowerBI

"Finance Toolbox"

Performance of an investment (with CAGR)

4 About DAX measures…
Measure details

« CAGR rate» measure

Step 1: Calculate CAGR:

CAGR = (End value/Start value)$^{1/n}$ - 1

→ with "n" is the number of period

```
1  CAGR Rate =
2  VAR First_Year_Reference_Period =
3  YEAR(CALCULATE(
4      MIN('DimDate (Reference Period)'[Date]),
5      ALLSELECTED('DimDate (Reference Period)'[Date])))
6
7  VAR Last_Year_Reference_Period =
8  [Last Year Good For Forecast]
9
10 VAR Number_Of_Year =
11 Last_Year_Reference_Period - First_Year_Reference_Period
12
13 VAR End_Value =
14 CALCULATE([Actual],DimDate[Year]=Last_Year_Reference_Period)
15
16 VAR Start_Value =
17 CALCULATE([Actual],DimDate[Year]=First_Year_Reference_Period)
18
19 VAR Rate_CAGR = DIVIDE
20     (End_Value,Start_Value)^(1/Number_Of_Year)-1
21
22 RETURN Rate_CAGR
```

Use case with PowerBI

"Finance Toolbox"

Performance of an investment (with CAGR)

4 About DAX measures…
Measure details

« FC CAGR rate» measure

FC = ForeCast

Step 2: Calculate Forecast:

Revenue Year N+1 = Revenue Year N * (1+CAGR)
Revenue Year N+2 = Revenue Year N * (1+CAGR)^2
Revenue Year N+3 = Revenue Year N * (1+CAGR)^3
Revenue Year N+4 = Revenue Year N * (1+CAGR)^4
Revenue Year N+5 = Revenue Year N * (1+CAGR)^5

Note : The value "N" is the measure "Last Year Good for Calculation" (see previous page)

```
FC CAGR Calculation =
VAR Last_Year_Reference_Period = [Last Year Good For Forecast]

VAR Number_Of_Year_For_Calculation =
SELECTEDVALUE(DimDate[Year])-Last_Year_Reference_Period

VAR Rate_CAGR = [CAGR Rate]

VAR Forecast_Calculation =
    IF(
    SELECTEDVALUE(DimDate[Year])>Last_Year_Reference_Period,
    CALCULATE(
        [Actual],
        DimDate[Year]=Last_Year_Reference_Period)
            * (1 + Rate_CAGR) ^ Number_Of_Year_For_Calculation)

RETURN Forecast_Calculation
```

More details on the book "Story of a Point / Financial forecast with PowerBI"

Use case with PowerBI

"Finance Toolbox"

Performance of an investment (with CAGR)

5 About visualizations…
Find the main colors

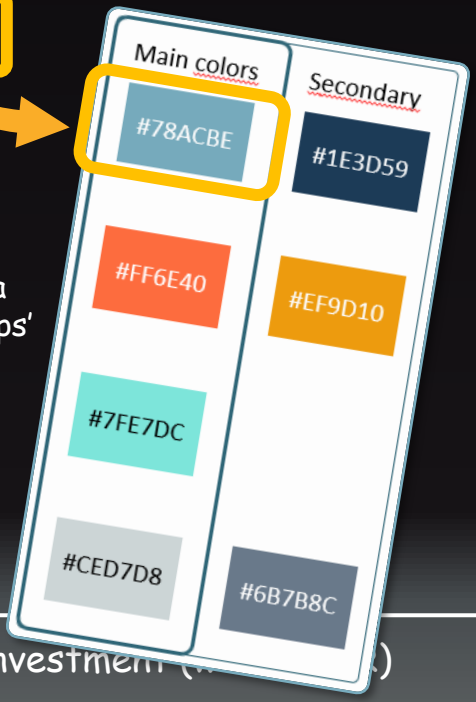
For my book "Story of a point", I took my inspiration from the book "Super Graphic" by Tim Leong (June 2013). An amazing book for color research.

When I find my main colors, then I search for the hexadecimal code with my smartphone and the "What a color?" mobile application. This application is really usefull to catch the color and the hexadecimal code.

With PowerPoint I test a lot of colors until I find 3 main colors (but here 4) and 3 secondary colors. My favorite color for the book theme and for PowerBI files is the color called:

"Dark Pastel Blue (hexadecimal code: #78ACBE).

Get hexadecimal code with "what a color?" mobile apps'



Use case with PowerBI

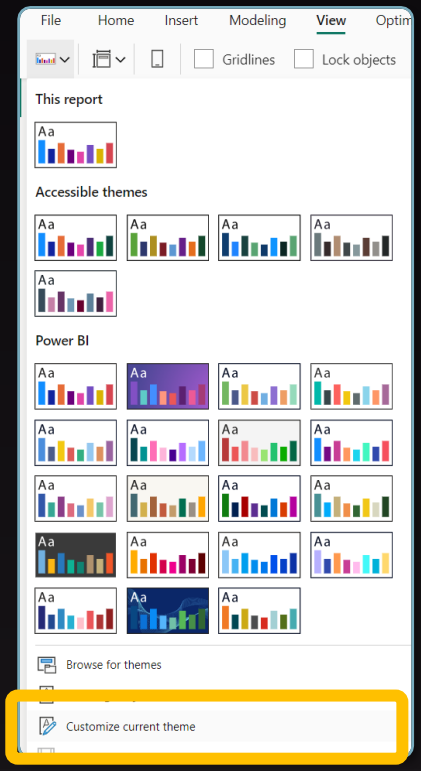
"Finance Toolbox"

Performance of an investment (…)

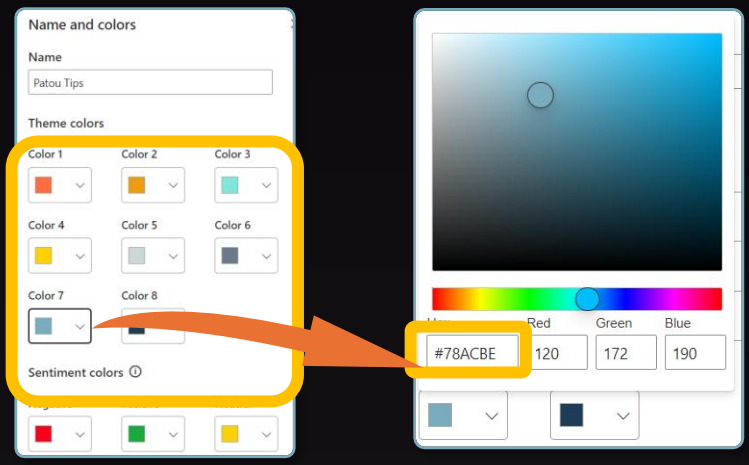
5

About visualizations…
Create colors theme in PowerBI

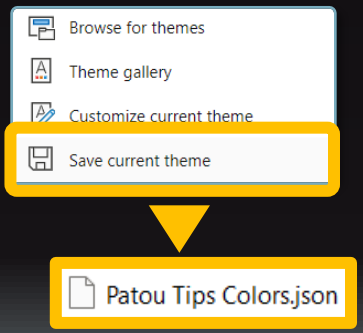
On PowerBI click on "Customize current theme"
Path: View > Themes



Here it's the creation of the 7 colors that I choosed before. And I put the hexadecimal codes for each colors.



Save your final theme, if you want to use it for an another PowerBi project. A json file will be create.



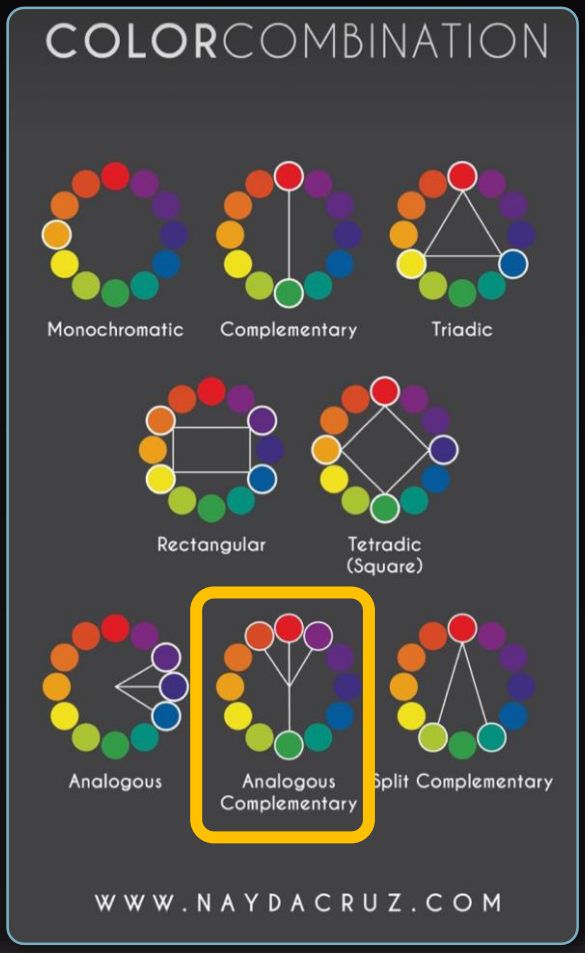
Use case with PowerBI

"Finance Toolbox"

Performance of an investment (with CAGR)

5

About visualizations…
Find the good harmony



Anything is possible, but often it's better to create your color theme according to color combinationrules.

Sometimes, when I find colors, I reopen my project a few days later just to see if the impact or mood I wanted is still the same.

Sometimes I change the theme 4 or 5 times!

The combination that I chose is nearly of the "analogous complementary" harmony.

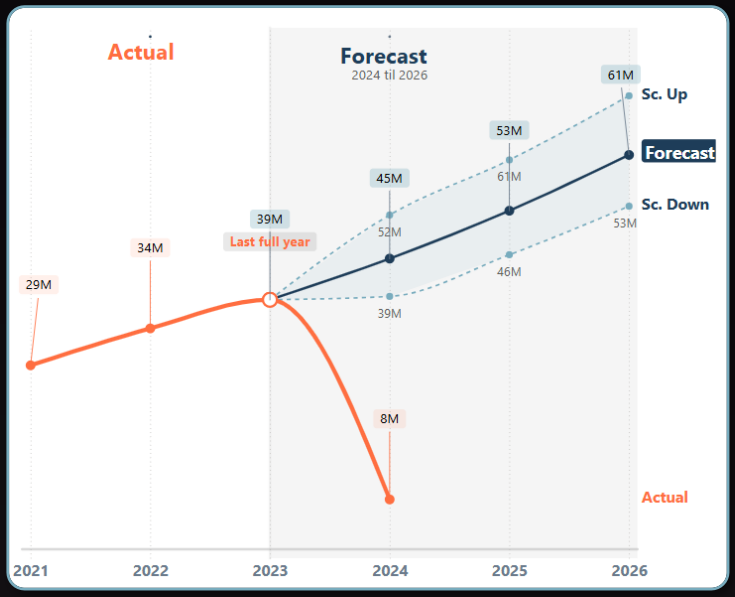
Use case with PowerBI

"Finance Toolbox"

Performance of an investment (with CAGR)

5

About visualizations…
Line chart with scenario



More details on the PowerBI file (pbix). See link on the second page or in the comment of the LinkedIn post.

More details on the book "Story of a Point / Financial forecast with PowerBI"

Use case with PowerBI

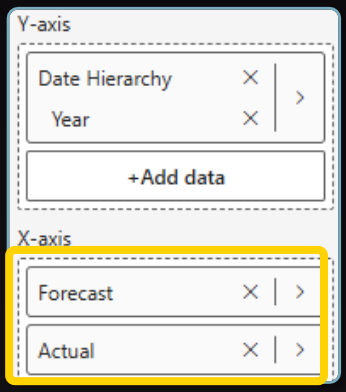
"Finance Toolbox"

Performance of an investment (with CAGR)

5

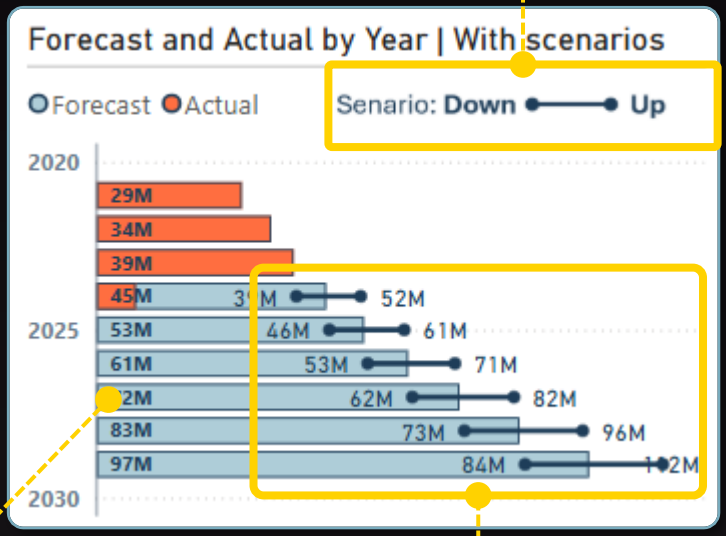
About visualizations…
Bar chart with bullet chart (1/2)

Clustered bar chart visualization



Put Forecast and Actual measures in this order.

Image created with PowerPoint



1 Actual and forecast bar

2 Scenario: range of forecast

Use case with PowerBI

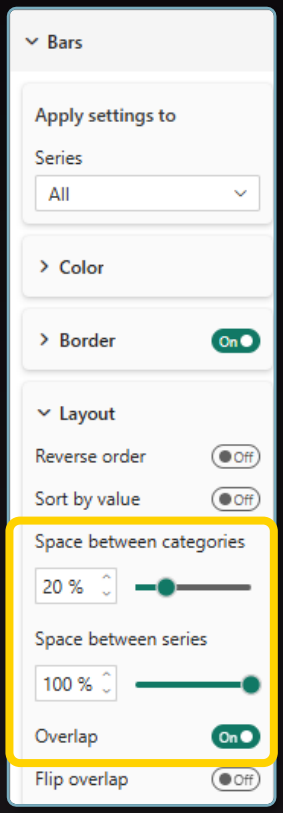
"Finance Toolbox"

Performance of an investment (with CAGR)

5

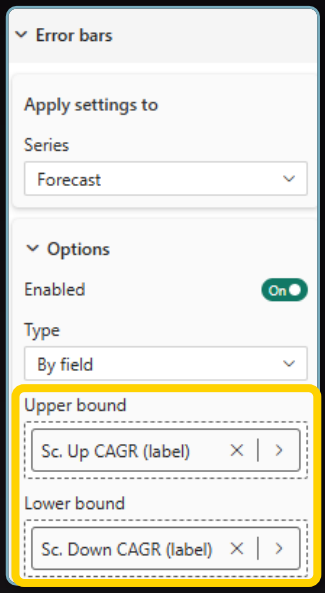
About visualizations…
Bar chart with bullet chart (2/2)

1 Actual and forecast bar

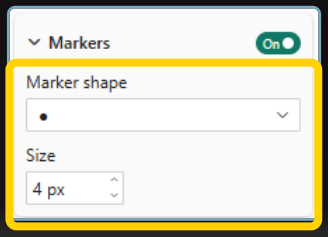


Don't forget to select "Overlap" option.

2 Scenario: range of forecast



These two measures will add scenario values



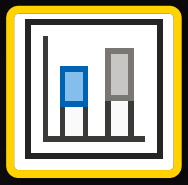
Use case with PowerBI

"Finance Toolbox"

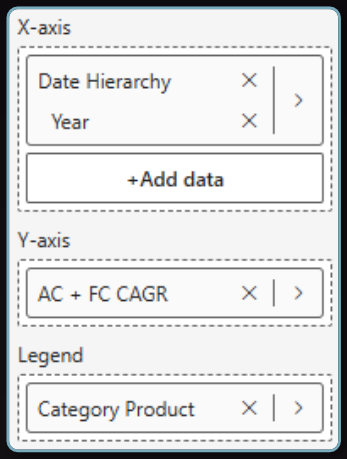
Performance of an investment (with CAGR)

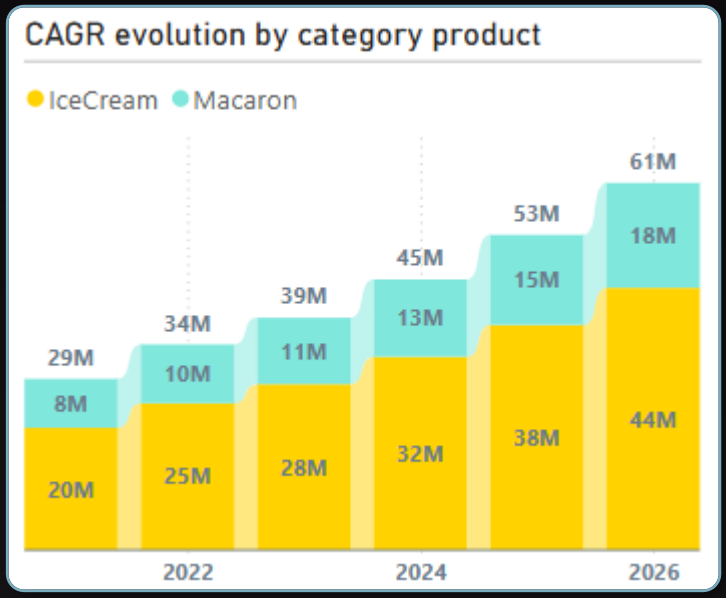
5

About visualizations…
Bar chart with ribbons (1/2)



Stacked column chart visualization





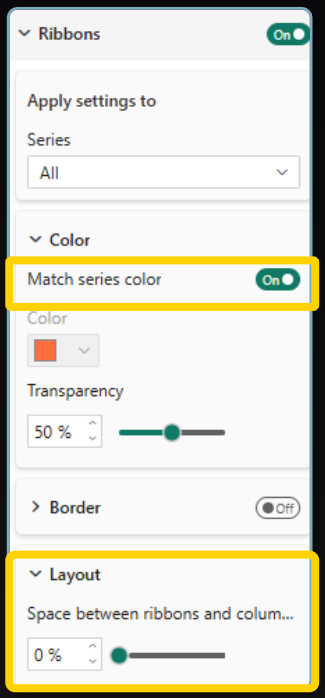
Use case with PowerBI

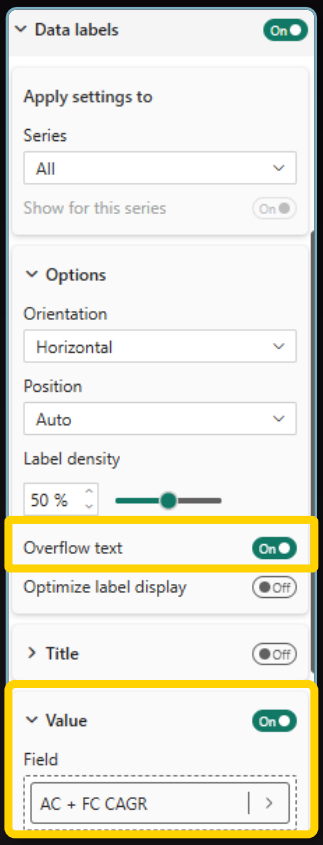
"Finance Toolbox"

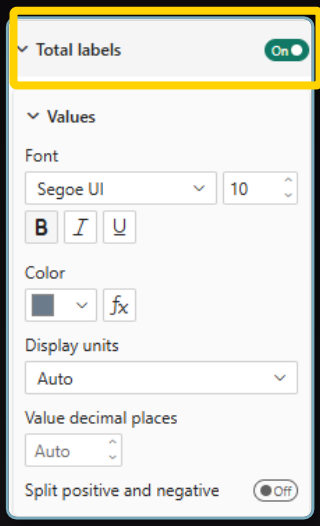
Performance of an investment (with CAGR)

5

About visualizations…
Bar chart with ribbons (2/2)







Use case with PowerBI

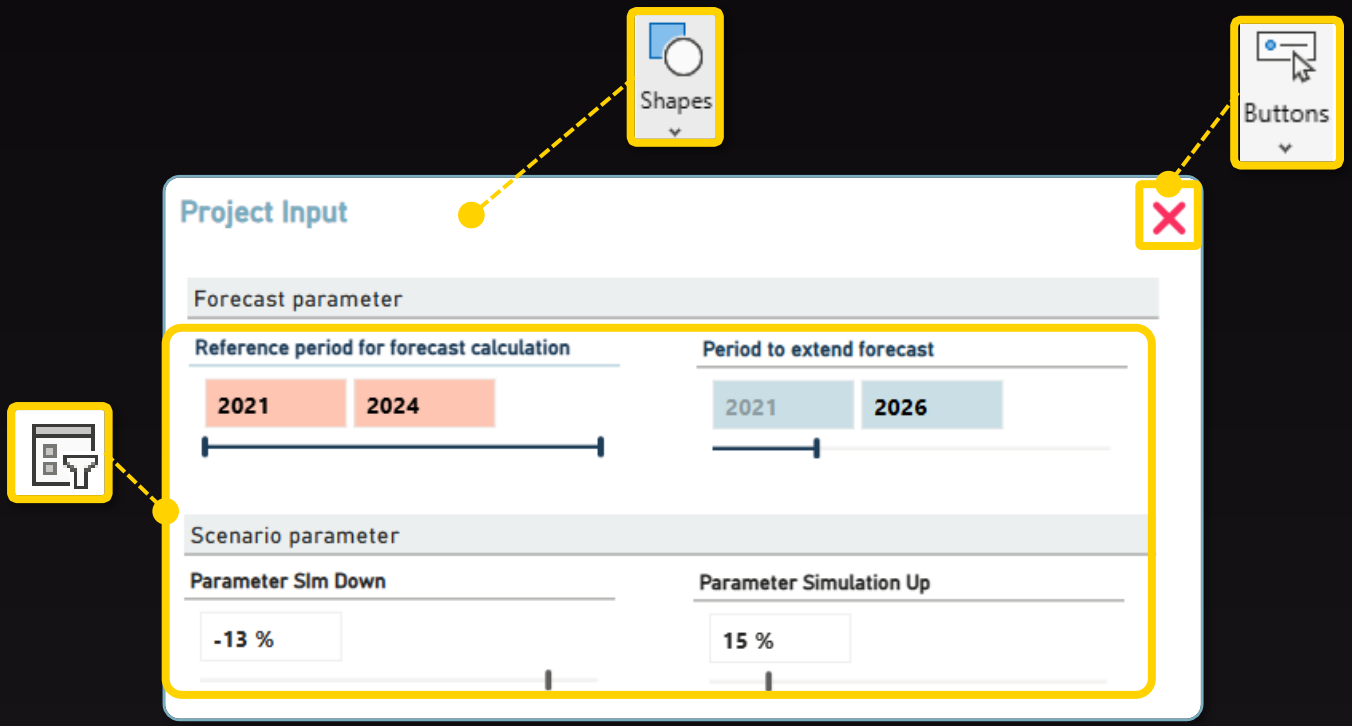
"Finance Toolbox"

Performance of an investment (with CAGR)

5

About visualizations…
UI/UX: Create Pop-Up (1/4)

Pop-ups are truly one of the best practices for giving your users the freedom to adjust their work. This creates interactivity and interest in a PowerBI project.



Use case with PowerBI

"Finance Toolbox"

Performance of an investment (with CAGR)

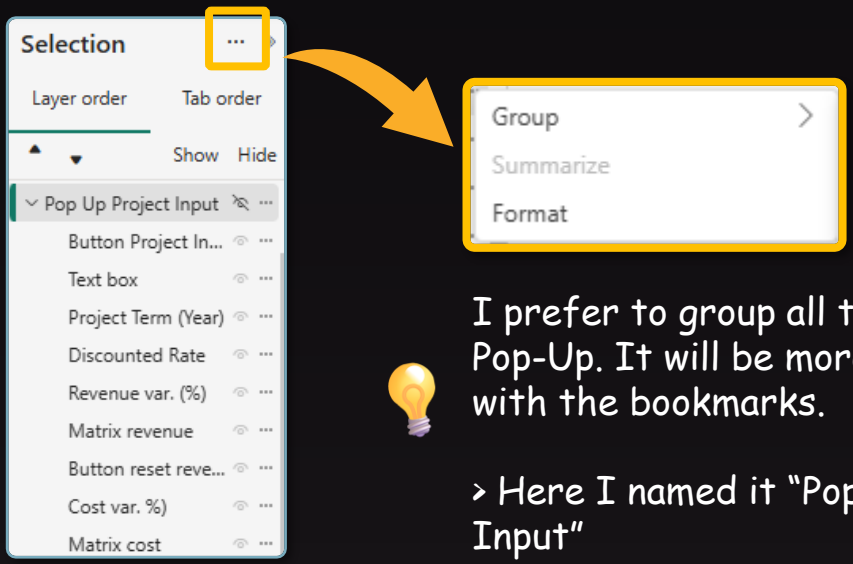
5

About visualizations…
UI/UX: Create Pop-Up (2/4)

Organise objets with "Selection panel"

This step is important to better manage the different objects in your Pop-Up and also to create interactivity with bookmarks (see next page).

In the selection panel, gather all the objects of a Pop-Up into a group



I prefer to group all the objects of a Pop-Up. It will be more easier to work with the bookmarks.

> Here I named it "Pop-Up Project Input"

Use case with PowerBI

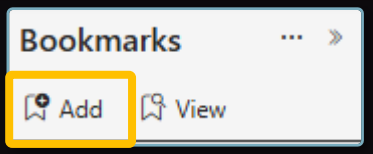
"Finance Toolbox"

Performance of an investment (with CAGR)

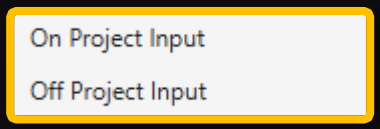
5

About visualizations…
UI/UX: Create Pop-Up (3/4)

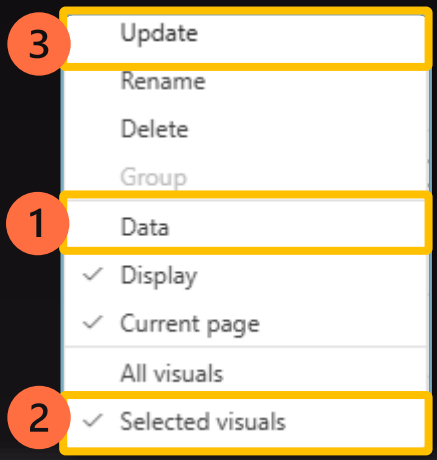
Create "Bookmarks" for the Pop-Up



In the Bookmarks panel, add two bookmarks:



> Create one to show the pop-up (On) and one to close it (Off).



For each Bookmark,

Before all, select the group of object in the selection Pane (see previous page), then:

1 - Unselect "Data"
2 - Select "Selected visuals"
3 - Then "Update"

Use case with PowerBI

"Finance Toolbox"

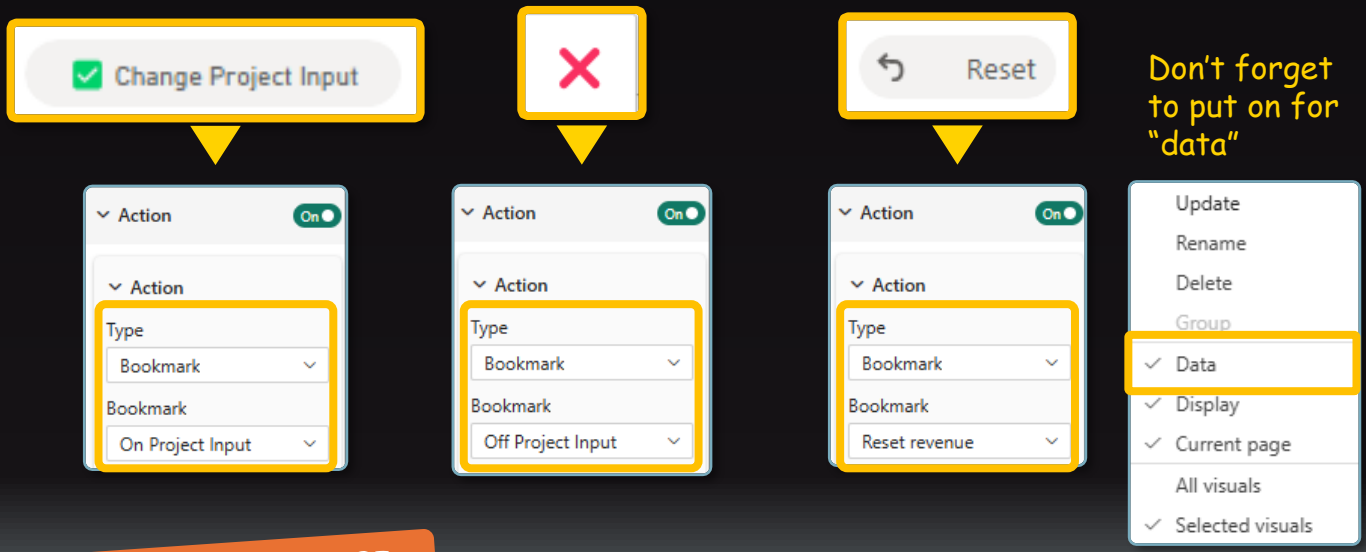
Performance of an investment (with CAGR)

5 About visualizations…
UI/UX: Create Pop-Up (4/4)

Create buttons and their interactivity

1. Create buttons

2. Create a bookmark for each button (see previous page) and place the bookmark on the "action" configuration button



Use case with PowerBI

"Finance Toolbox"

Performance of an investment (with CAGR)

5

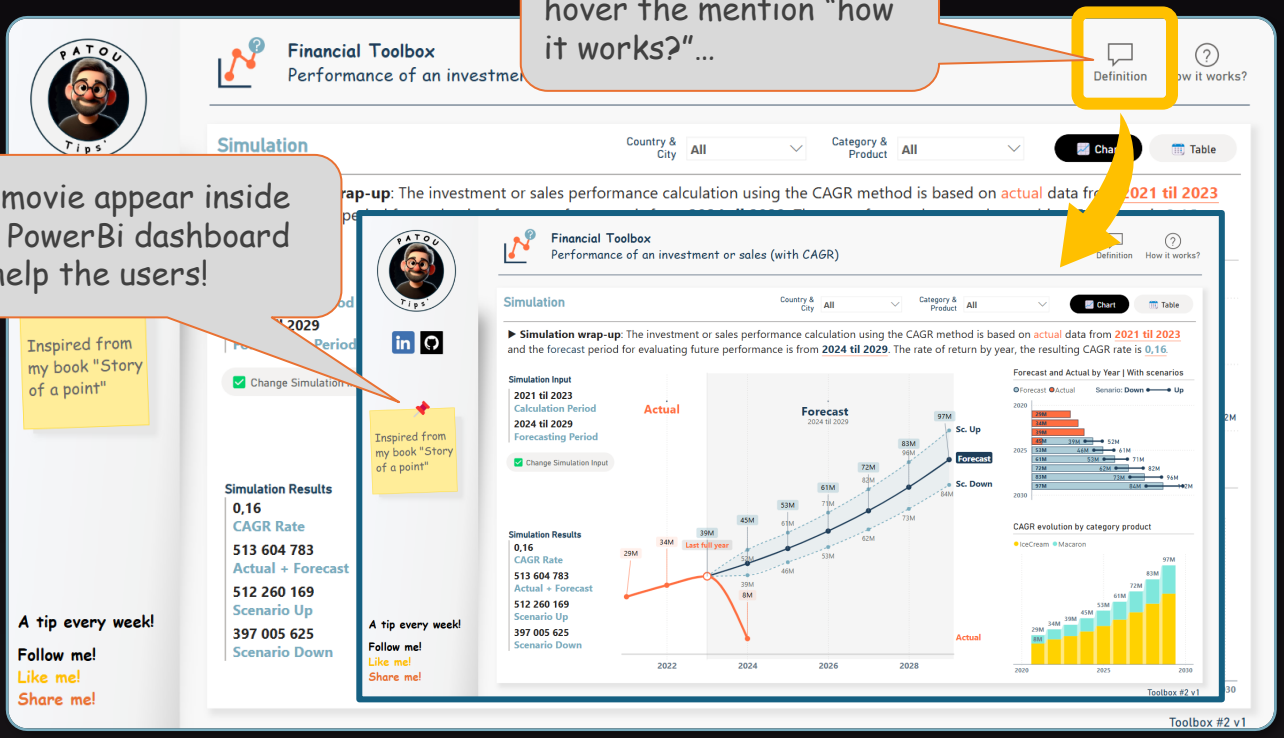
About visualizations…
UI/UX: How it works button (1/4)

Create a movie to help your users in PowerBI

The idea:

When the user drag on hover the mention "how it works?"…

…A movie appear inside the PowerBi dashboard to help the users!



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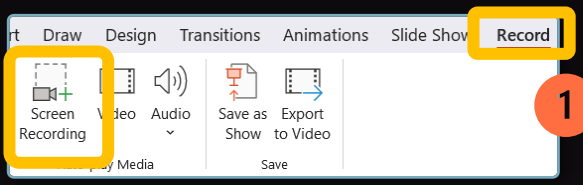
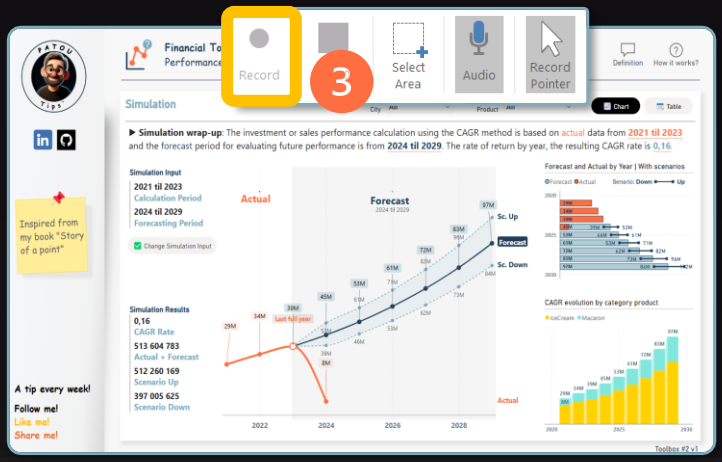
About visualizations…
UI/UX: How it works button (2/4)

Create the movie in PowerPoint



1. On PowerPoint:
Path: Record > Screen Recording

2. A pop-up appear, with the button "Select Area" select the aera on your PowerBi project. A dashed red line indicate you the aera.



3. Click on record to start and the touchs ↑ + ⊞ + Q to stop the movie. It's done!

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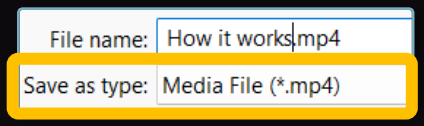
About visualizations…
UI/UX: How it works button (3/4)

Save the movie as an animated GIF

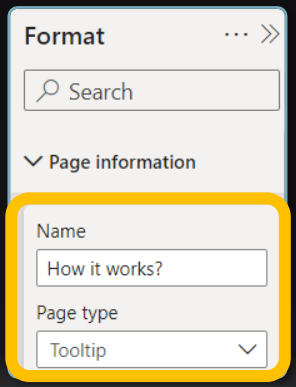


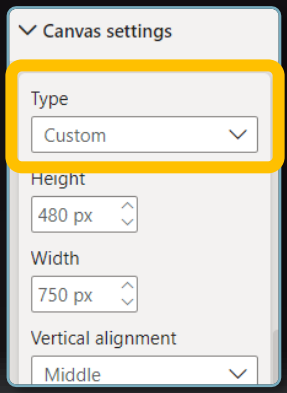
In PowerPoint save your record as MP4 format

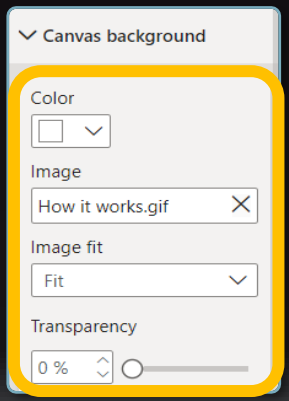
Use an online service or a software to convert your file from MP4 format to an animated GIF. Here I use "Convertio"

On PowerBI, create a new page for the animated GIF

Settings of the page







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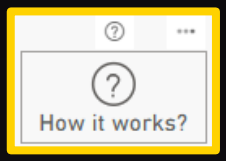
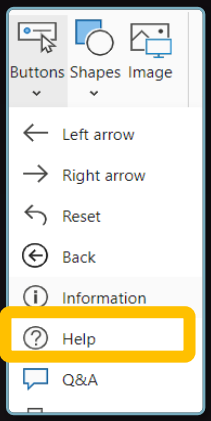
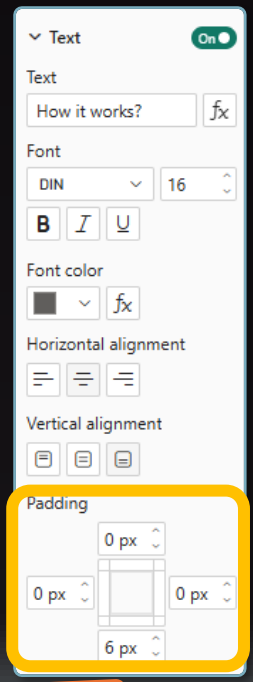
About visualizations…
UI/UX: How it works button (4/4)

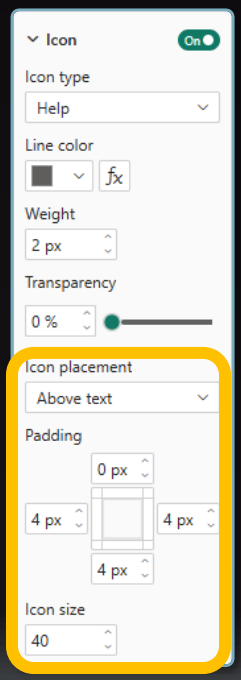
On PowerBI, create a button

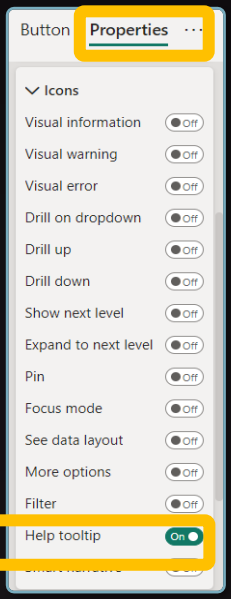


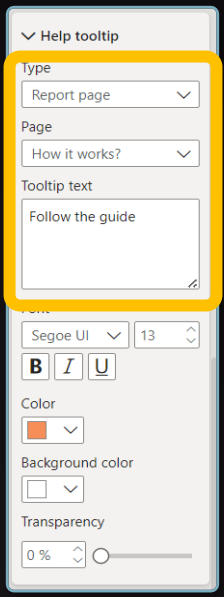
The final result: Drag on hover the button "How it works?" a help symbol (?) appear, To drag on hover this symbol will display the movie.











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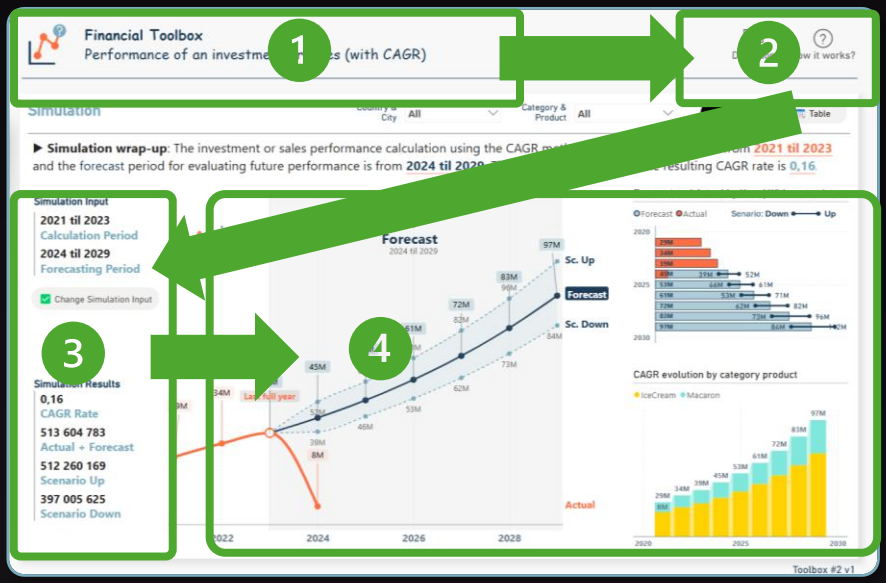
About visualizations…
Storytelling: "Z reading pattern".

The organization and prioritization are with the "Z reading pattern". The natural reading direction is often from left to right and from top to bottom in a "Z" shape.



1. Topic of the projet
2. Help and definition
3. KPI of the project
4. Visualization of the project

Use case with PowerBI

"Finance Toolbox"

Performance of an investment (with CAGR)

Don’t forget!
This isn't the truth, it's just my truth!

Patou Tips

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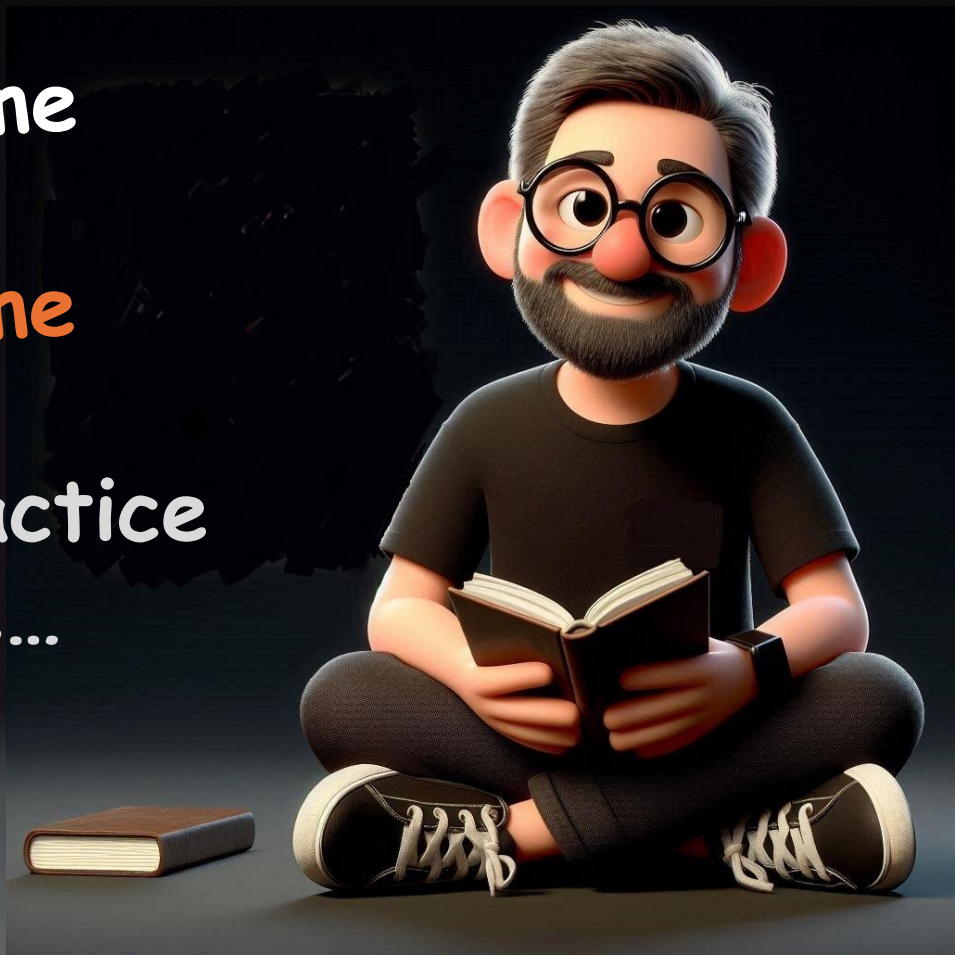
And practice
with me...