POWER BI DAX

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INTRODUCTION

- Introduction to Power BI DAX language
- Importance of DAX
- Difference between calculated columns and measures

POWER BI DAX LANGUAGE

- The DAX (Data Analysis Expressions) language is a formula language used in Power BI to create calculated columns and measures.

- Powerful way to manipulate and analyze data within Power BI.

IMPORTANCE OF DAX

DAX plays a crucial role allowing users to

- perform complex calculations
- create custom metrics
- define relationships between data tables.

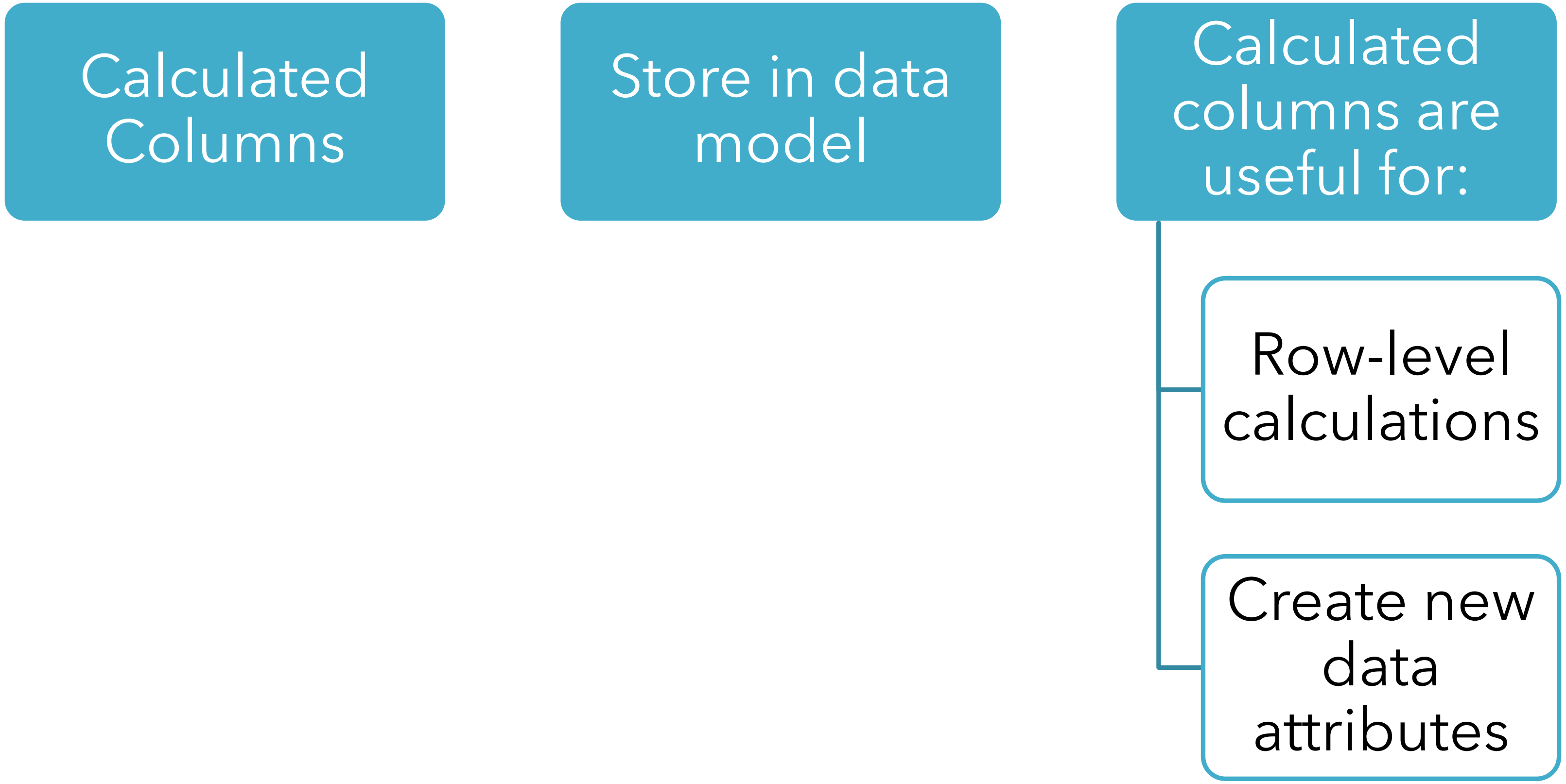
By using DAX, you can unlock the full potential of your data and gain deeper insights.

CALCULATED COLUMNS - MEASURES

A column that you add to a table in Power BI, where each row's value is calculated based on a formula.

Computed during the data loading process

CALCULATED COLUMNS - MEASURES



Calculated Columns

Store in data model

Calculated columns are useful for:

- Row-level calculations
- Create new data attributes

CALCULATED COLUMNS - MEASURES

A measure is a calculation performed on the data in a specific context

A measure is a calculation performed on the data in a specific context

Aggregation or Percentages

CALCULATED COLUMNS - MEASURES

- Created within the context of visualizations
- Evaluated dynamically based on the applied filters and slicers.
- Measures allow for flexible and interactive analysis, as they adapt to the user's selection and context.

IN SUMMARY

Calculated columns are computed during data loading and apply to every row

Measures are calculated dynamically based on the selected context and are used for aggregations and calculations within visualizations

PRACTICE

SIMPLE COLUMN
SIMPLE MEASURE

CALCULATED COLUMN

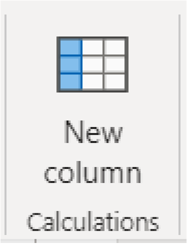
- Definition of calculated column
- How to create a calculated column
- Example of a calculated column

A CALCULATED COLUMN

is a column that you can add to a table in Power BI,

where each row's value is calculated based on a formula or expression.

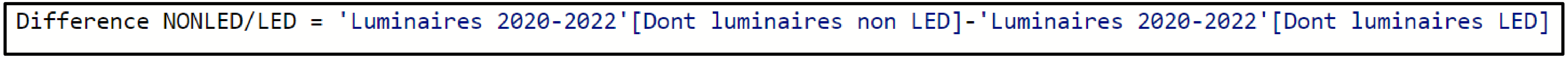
HOW TO CREATE A CALCULATED COLUMN

- Click on 

- Column_Name = Expression

EXAMPLE OF A CALCULATED COLUMN

- Using our dataset let us create a new column



```
Difference NONLED/LED = 'Luminaires 2020-2022'[Dont luminaires non LED]-'Luminaires 2020-2022'[Dont luminaires LED]
```

MEASURE

- Definition of measure
- How measures differ from calculated columns
- Creating measures in Power BI

MEASURE

Calculation performed on the data in a specific context

such as aggregating values or calculating percentages.

CREATING MEASURES IN POWER BI

Average LED Lights per Region

To calculate the average number of LED lights per region

- Average LED Lights per Region = AVERAGE('Table'[LED Light Number])
- In this example, the measure "Average LED Lights per Region" is created using the AVERAGE function. It calculates the average value of the "LED Light Number" column for each region

IN CONCLUSION

- Measures provide dynamic calculations based on the selected context, allowing you to explore and analyze your data interactively.
- Various aggregations, calculations, and statistical operations, empowering you to gain valuable insights from your data.

FUNCTIONS

- IF
- SWITCH
- AND OR

IF FUNCTION

- The IF function in DAX allows you to perform conditional evaluations and return different results based on a specified condition.
- It follows the syntax: IF(condition, value_if_true, value_if_false).
- Example:

ProfitStatus = IF(SUM('Table'[Profit]) > 0, "Profitable", "Non-Profitable")

Creates a columns with discret value “Profitable” if [Profit] > 0 else value will be “Non-Profitable”

SWITCH FUNCTION

- The SWITCH function in DAX allows you to evaluate multiple conditions and return different results based on each condition
- SWITCH(<expression>, <value1>, <result1>, <value2>, <result2>, <default_result>)
- Example:

```
ProductCategory = SWITCH('Table'[Category],
   "A", "Category A",
   "B", "Category B",
   "C", "Category C",
   "Other")
```

SWITCH WITH AN EQUALITY

- When we test an inequality we have to replace the table content by TRUE()
- Example:

```
Geographical Led NoLed  3 Category = SWITCH(
        TRUE(),
        [Difference NONLED/LED Measure] > 20000, "Regional Best Track",
        [Difference NONLED/LED Measure] > 10000, "Regional Good Track",
        "Work Todo“)
```

AND FUNCTION

- The IF function in DAX allows you to perform conditional evaluations and return different results based on a specified condition.
- It follows the syntax: IF(condition, value_if_true, value_if_false).

TABLE FUNCTIONS

Overview of table functions in DAX

Commonly used table functions

Examples of table functions and their usage

OVERVIEW OF TABLE FUNCTIONS

Table functions in DAX are designed to work with tables or table-like structures.

They allow you to perform operations on tables, filter data, create new tables, and manipulate table structures.

Table functions help in data transformation, aggregation, and creating complex calculations within Power BI.

COMMONLY USED TABLE FUNCTION

1. FILTER

- The FILTER function is used to filter a table based on specified conditions.
- It returns a new table that includes only the rows that meet the given criteria.

```
FilteredTable = FILTER('Table', 'Table'[Sales] > 1000)
```

FILTER function is used to create a new table, 'FilteredTable', which contains only the rows where the sales amount is greater than 1000.

COMMONLY USED TABLE FUNCTION

2. SUMMARIZE:

- The SUMMARIZE function is used to create a summary table by grouping data based on one or more columns and calculating aggregations for each group.

```
SummaryTable = SUMMARIZE('Table', 'Table'[Region], "Total Sales", SUM('Table'[Sales]))
```

In this example, the SUMMARIZE function is used to create a summary table, 'SummaryTable', by grouping the data based on the 'Region' column and calculating the total sales for each region.

COMMONLY USED TABLE FUNCTION

3. RELATEDTABLE:

- The RELATEDTABLE function is used to retrieve a related table based on the active relationship between tables.

```
RelatedTable = RELATEDTABLE('RelatedTable’)
```

In this example, the RELATEDTABLE function is used to get the related table, 'RelatedTable', based on the active relationship with the current table.

EXAMPLES OF TABLE FUNCTIONS AND THEIR USAGE:

1. CALCULATETABLE:

- The CALCULATETABLE function is used to evaluate a table expression in a modified filter context.

```
FilteredTable = CALCULATETABLE('Table', 'Table'[Region] = "North")
```

In this example, the CALCULATETABLE function is used to create a new table, 'FilteredTable', by applying a filter to the 'Region' column to include only the rows where the region is "North".

EXAMPLES OF TABLE FUNCTIONS AND THEIR USAGE:

2. VALUES:

The VALUES function is used to return a table with distinct values from a column or columns.

```
DistinctRegions = VALUES('Table'[Region])
```

In this example, the VALUES function is used to create a new table, 'DistinctRegions', which contains the distinct values from the 'Region' column.

TABLE FUNCTIONS AND THEIR USAGE

3. SUMMARIZECOLUMNS:

The SUMMARIZECOLUMNS function is used to create a summary table with calculated columns and measures.

```
SummaryTable = SUMMARIZECOLUMNS('Table'[Region],"Total Sales", SUM('Table'[Sales]),"Average Price",
AVERAGE('Table'[Price])
)
```

In this example, The result is a summary table, 'SummaryTable'

EXAMPLES OF TABLE FUNCTIONS AND THEIR USAGE:

4. GENERATE:

The GENERATE function is used to create a new table by combining two or more columns or tables.

CombinedTable = GENERATE('Table1', 'Table2')

In this example, the GENERATE function is used to create a new table, 'CombinedTable', by combining the rows from 'Table1' and 'Table2'.

EXAMPLES OF TABLE FUNCTIONS AND THEIR USAGE:

5. TOPN:

The TOPN function is used to return the top N rows based on a specified criteria or ranking.

TopCustomers = TOPN(10, 'Table', 'Table'[Sales])

In this example, the TOPN function is used to create a new table, 'TopCustomers', by selecting the top 10 customers based on their sales amount from the 'Table'.

EXAMPLES OF TABLE FUNCTIONS AND THEIR USAGE:

Table functions in DAX provide powerful capabilities for data manipulation and transformation.

By leveraging these functions, you can filter, summarize, relate tables, and create custom table expressions to meet your specific analytical requirements within Power BI.

EVALUATION CONTEXT

Understanding evaluation context in DAX

Implicit and explicit evaluation context

How evaluation context affects calculations

Examples

EVALUATION CONTEXT - RELATIONSHIPS

- Utilizing evaluation context in the presence of relationships
- Handling different evaluation contexts with relationships
- Examples illustrating evaluation context and relationships

TIME INTELLIGENCE

- Introduction to time intelligence functions in DAX
- Commonly used functions
- How to calculate year-to-date, quarter-to-date, etc.
- Examples of time intelligence calculations

TIME INTELLIGENCE CONTINUED

- Additional time intelligence functions and calculations
- Comparing periods, calculating growth rates, etc.
- Examples showcasing advanced time intelligence calculations

TIME INTELLIGENCE CONTINUED

- Introduction to time intelligence functions in DAX
- Commonly used functions
- Year-to-date, Quarter-to-date, etc…
- Examples of time intelligence calculations