

Power BI User Group Evening Session

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1 WORKING WITH CALCULATION GROUPS

Agenda

- The Problem - Measure Mayhem
- First Aid - Calculation Groups
- Field Parameters - Giving Power to the People
- The Power (BI) Couple - Calculation Groups & Field Parameters combined
- It's not all fun and games!
- Optional geekery under the hood

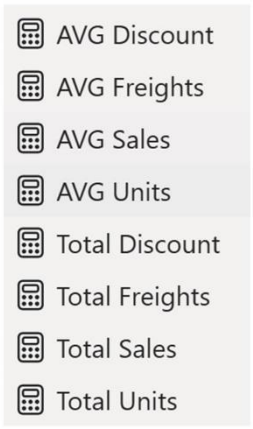


Measure Mayhem

- Every data model contains quite some base measures like the ones below

```
Total Units       = SUM( IS[OrderQuantity] )
Total Sales       = SUM( IS[SalesAmount] )
Total Discount    = SUM( IS[DiscountAmount] )
Total Freights    = SUM( IS[Freight] )
...
```

- Let's imagine a small model with 20 base measures
  - 4 Columns in a Fact Table:
    - DiscountAmount
    - Freight
    - SalesAmount
    - OrderQuantity
  - MIN( ), MAX( ), AVERAGE( ), SUM( ), COUNT( )



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Measure Mayhem^2

- For every measure you need:
  - YTD( )
  - MTD( )
  - SamePeriodLastYear( )
  - YoY Growth( )
  - YoY Growth %( )



- (# base Measures) x (# Calculate( ) – statements) =



Measure Mayhem^3

- 20
- 2(
- 28



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+ Keep in mind a developer's state of mind



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1.1 FIRST AID

Would it be possible ??

- Instead of having to repeat measure functionality like below

```
Total Unit YTD =          CALCULATE( [Total Units]         ,DATESYTD( 'Date'[Date] ) )
Total Sales YTD =         CALCULATE( [Total Sales]         ,DATESYTD( 'Date'[Date] ) )
Total Product Cost YTD =  CALCULATE( [Total Product Cost]  ,DATESYTD( 'Date'[Date] ) )
```

- We can do something like: Hey Power BI, Do the YTD thing… on any measure I pick!



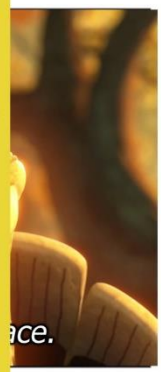
Calculation Groups

First Aid – Calculation Groups

- **Witho**
- (# bas
- 28 bas
- **-> 196**

- **With C**
- (# bas
- 28 bas
- **-> 35**

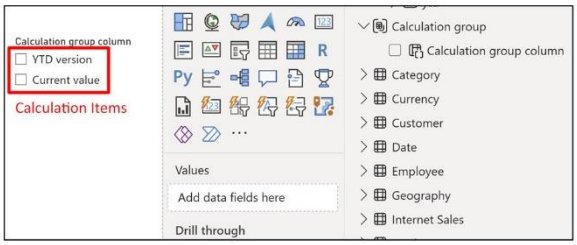




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Terminology

- Calculation Group
  - Appears as a table in the Data tab
- Calculation Group Column
  - Appears as a column in the Data tab
    - Use in Slicers & Visuals
- Calculation Items
  - Every possible Calculate-statement
    - Use SELECTEDMEASURE( ) to grab the **EXPLICIT** measure in the visual
      - YTD version = Calculate(SELECTEDMEASURE( ), datesytd('Date'[Date]))
    - Dynamic Formatting is possible
      - SELECTEDMEASUREFORMATSTRING( ) to retrieve the current measures format



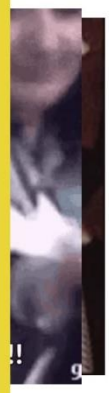
Multiple Calculate Statements

Total Uni
CA

- **Withou**
- (# bas
- 28 base
- **-> 588**

- **With C**
- (# bas
- 28 bas
- **-> 38 r**





+ ...

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Terminology

- Ordinal
  - Order of the Calculation Items in a slicer or visual
- Precedence
  - Execution order of the calculation items
  - The lower the value, the sooner the execution
  - F.ex Formatting is executed the latest

Problem Solved? NOT YET!

- **Solution** with Calculation Groups:
  - Simplified measure management (huge measure amount reduction!)
  - End-user can decide the CALCULATE combination
- **Still a problem**:
  - Developer must decide what to show in a visual
  - End-users want to see (A LOT OF) different things!
    - Total Units per Year
    - Average Sales per Location
    - Maximal Discount per Product Category
    - ...



Field Parameters

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Field Parameters - Giving Power to the People

- Let the
- Genera
  - Avai
  - Avai
- Use Fi

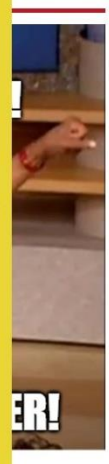


CalendarYear Education

The Power (BI) Couple

- Use Fi
  - Avai
  - Avai
- Other
  - Time
  - Date
  - Forn
  - CAL
- Add Sl
  - Mea
  - Dim
  - Ever
- End-us





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The Power (BI) Couple

- Watch
- Anticip
  - SELE
  - ISSE
  - HAS
  - ISFIL
  - SELE
  - …

SPLY To



🚫 ! It is not all fun and games ! 🚫

- Watch out for composite models
- No implicit measures once you use calculation groups
  - Enable implicit measures manually if you want to roll back
- Trade-off between model complexity **<->** redundant measure creation
  - Both for developer & end-user



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Optional Geekery

- Field Parameters behind the scenes
- Calculation Groups fine-grained control

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Field Parameters behind the scenes

- A Field Parameter is a Calculated Table in the Data Model
- It has two extended properties compared to a normal Calculated Table
  - **relatedColumnDetails: groupByColumn**
  - **extendedProperty**

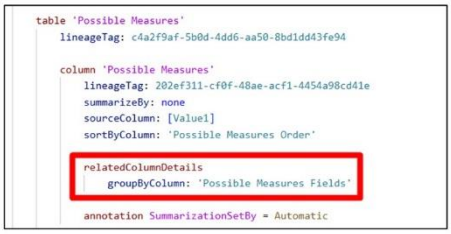


relatedColumnDetails : groupByColumn

```
relatedColumnDetails
    groupByColumn: 'Possible Measures Fields'
```

Configures

- 'Possible Measures' column as display column
  - User-friendly text in visuals and slicers
- 'Possible Measures Fields' column as data column behind the scenes

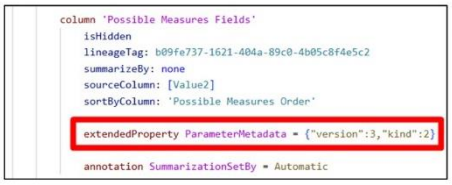


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extendedProperty ParameterMetadata

```
extendedProperty ParameterMetadata = {"version":3,"kind":2}
```

- Configures extra metadata for internal use
- `"version":3` : metadata schema version
- `"kind":2` : indicates a **field parameter**



Field Parameter Table Definition

```
Possible Measures = {
    ("Total Discount", NAMEOF( 'Measure Table'[Total Discount] ), 0),
    ("Total Freights", NAMEOF( 'Measure Table'[Total Freights] ), 1),
    ("Total Sales",    NAMEOF( 'Measure Table'[Total Sales]    ), 2),
    ("Total Units",    NAMEOF( 'Measure Table'[Total Units]    ), 3)
}
```

- Problem?
- Relocating Measures -> **Field Parameter crashes!**

- Solution -> Reference Measures without Table name

```
Possible Measures = {
    ("Total Discount", NAMEOF([Total Discount] ), 0),
    ("Total Freights", NAMEOF([Total Freights] ), 1),
    ("Total Sales",    NAMEOF([Total Sales] ), 2),
    ("Total Units",    NAMEOF([Total Units] ), 3)
}
```

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Calculation Groups fine-grained control

- What s
  - Mu
  - No
- By def
- But thi
  - sele
  - mult
  - noS
  - Com



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THANK YOU!

- Calculation Groups -> Keep Measures manageable
- Field Parameters -> End-users can dynamically choose visual dimensions
- Combine the two for maximal dynamic behavior

- Want to learn more:
  - https://u2u.be/courses/power-bi

- Download everything from :
  - https://we.tl/t-7TFGcTlE5B



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