

Ultimate Financial Reporting in Power BI

René Berends iqbs Solutions







René Berends Managing Director







BEND

Bij BEND voel je je gelijk thuis. De Groningse Customer Engagement specialist kenmerkt zich door gastvrijheid en dat merk je aan alles. Van een fijn kantoor, waar het prettig werken...

Meer BEND \rightarrow



iq	bs
----	----

Wij worden enthousiast van alles wat met data te maken heeft, minstens zo enthousiast worden we van de organisaties en mensen achter deze data. Samen met een team van ...

Meer iqbs →



Newminds

Newminds is IT op z'n Twents; nuchter en wars van onnodige complexiteit. In onze platte organisatie vind je mensen van verschillende leeftijden, afkomst en overtuiging. Want wie ...

Meer Newminds \rightarrow





Modern Work







Digital & App Innovation Azure



Pixelzebra

Bij Pixelzebra draait het om mensen. Niet alleen in de oplossingen die we samen voor heel veel verschillende organisaties maken, maar ook op de werkvloer. Wij zijn een soepe...

Meer Pixelzebra \rightarrow



Xperit

Bij Xperit vind je mensen met verschillende specialismen, achtergronden en levensbeschouwing. En toch staan wij voor verbinding. Omdat we iedereen accepteren ...

Meer Xperit \rightarrow





Power BI for CPM: CCH Tagetik, Lucanet

Power Bl for Infor: Baan, Infor LN, Infor M3

Power BI for SAP: SAP BCC, S4/HANA

Power Bl for Odoo: Odoo 8 to Odoo 18



G



SOME CUSTOMERS







- What is Financial Reporting?
- Part 1: Financial Statements
- Part 2: Scenarios and comparisons
- Part 3: Time calculations
- Part 4: Multi Currency
- Part 5: Commenting
- Part 6: Visualisations





- The Income Statement, also known as the Profit & Loss Statement, is like a stopwatch. It measures the company's financial performance over a specific period, tallying revenues, costs, expenses, and ultimately calculating profit or loss. Like a race, it's all about speed or in this case, earnings.
- The **Balance Sheet**, on the other hand, is a snapshot. It gives you a picture of what a company owns (assets) and owes (liabilities) at a particular point in time, as well as the equity that remains for shareholders. Consider it the Instagram of financial statements, capturing the company's financial state in one frame.
- The Cash Flow Statement. Think of it as the company's bank statement. It reveals how the company is generating and using cash from three areas: operational activities, investment activities, and financing activities. It's the proof of where the cash is flowing, highlighting the cash-generating ability of the company.

iąbs





iābs Typical Financial Statement



POWER BI GEBRUIKERSGROEP





- Big slide decks often same reports split by business unit / company hierarchy etc
- Multiple report types P&L, Balance Sheet, Cost centre split
- Scenarios and comparisons Actuals, budgets, forecasts
- Trends and KPI's How are we doing in time?
- Commenting Explain the numbers
- Month-end closure stress Reload data last minute!



Generic data model

Our approach







Dimensions:

- General Ledger accounts
- Company structure
- Periods
- Dimensions like cost centres, business partners etc.

Facts:

• General Ledger transactions



iābs Basic data model





Financial Statements

Our approach











Goal

- Flexible setup of financial statements by end users
- Without the need to code DAX for any new statement layout or line

Usability

- On any GL dataset, for any source system
- When financial statements setup is supported in ERP, this can be reused (like in Business Central)





FST Schema: a specific report like 'Profit & Loss'

FST Item: a line on a specific report

Aggregation: FST Item which aggregates one or more GL Accounts

Formula: FST Item which calculates based on other FST Items



<mark>ā⊵s</mark> Steps

Data model

- Create a special dimension called 'Financial Statements'
- Which links to the fact table on GL Account level
- GL Account aggregations are easy
- GL Account formulas are the challenge!

Measures

• We need some smart DAX to calculate the formulas





GL Transactions			Accounts			Financial Statements
Account Code	X.		Account			Account Code
Account Move Line Key	X.		Account Code			AccountID
AccountID	X		Account Description			Calculation Flag
Amount	X		AccountID	X		Dimension Code
Amount Base	X	* 1	Accounting Type		*	Display Flag
Amount Credit	X		Asset Type			Factor
Amount Credit Base	X		Company Code	X		Fraction Part
Amount Credit Local	X		CompanyID	X		FST Formula
Amount Debit	X		GL Account Source ID	X		FST Item
Collapse 🔿			Collapse 🔿			Collapse 🔨





FST Schema Code	FST Schema Description	•
10	Income Statement	
20	Balance Sheet	
30	Cash Flow	

FST Schema Code 🖵	FST Item Code 🛛 🖵	FST Item Description	🔻 FST Type 🔽	FST Formula	•
10	PL1000	Rental Revenue	А		
10	PL1010	Service and Support Revenue	A		
10	PL1100	Recurring Revenue	F	PL1000:PL1010	
10	PL1200	Project Revenue	А		
10	PL1300	Other	А		
10	PL1500	Revenue	F	PL1100+PL1200+PL1300	
10	PL2000	Cost of sales	А		
10	PL2200	Gross profit	F	PL1500+PL2000	
10	PL2200P	Gross profit %	F	PL1500/PL2200	

FST Schema Code	FST Item Coc	le 🖵 Account Code 💌
10	PL1000	8210
10	PL1000	8215
10	PL1000	8220
10	PL1000	8200
10	PL1010	8100
10	PL1200	8000
10	PL1200	8400





Assign GL accounts

- FST Type = A
- Entries in FST_Item_Accounts table





Summarize FST accounts

- Range: formula
 - FST Type = F
 - Refer to existing FST Codes: PL1000:PL1010
- Plus (or enumerate): formula
 - FST Type = F
 - Refer to existing FST Codes: PL1100+PL1200+PL1300





(Sub)totals

- Plus
 - FST Type = F
 - Refer to existing FST Codes: PL1100+PL1200+PL1300
- Minus
 - FST Type = F
 - Refer to existing FST Codes: PL1000 PL1100





KPIs

- Divide
 - FST Type = F
 - Refer to existing FST Codes: PL1000 / PL1100
- Multiply
 - FST Type = F
 - Refer to existing FST Codes: PL1000 * PL1100
 - Multiply by factor: PL1200*365





Dimension table contains:

- All FST Items
- Exploded to GL Accounts as lowest level
- Includes logic for mentioned functionality

Transformation

- SQL version (T-SQL/Spark SQL)
- PQ version

iqbs FST Transformation steps



- 1. Join GL accounts and FST Items
- 2. Handle ranges: all between left and right part of : character
- 3. Handle plus: explode based on + character
- 4. Handle minus: right part of character gets factor -1
- 5. Handle divide:
 - 1. Left part of / character is NUMERATOR
 - 2. Right part of / character is DENOMINATOR
- 6. Handle multiply:
 - 1. Left part of * character is LEFT
 - 2. Right part of * character is RIGHT

Transform in T-SQL procedure



-- Formula Range : SELECT fs.[FST Schema Code] , fs.[FST Schema Description] , fi.[FST Item Code] , fi.[FST Item Description] , fa.[FST Item Code] AS [FST Item Child Code] , 1 AS [Flag] , 0 AS [Is Fraction] , 'NUMERATOR' AS [Fraction Part] INTO #FST_Structure FROM [dbo].[FST_Schemas] fs INNER JOIN [dbo]. [FST_Items] fi ON fs.[FST Schema Code] = fi.[FST Schema Code] AND fi.[FST Type] = 'F' LEFT JOIN #FST_Item_Accounts fa ON fi.[FST Schema Code] = fa.[FST Schema Code] AND fa.[FST Item Code] >= SUBSTRING(fi.[FST Formula], 1, CHARINDEX(':', fi.[FST Formula])-1) AND fa.[FST Item Code] <= SUBSTRING(fi.[FST Formula], CHARINDEX(':', fi.[FST Formula])+1, 20)

WHERE CHARINDEX(':', [FST Formula]) > 0

, fS0.[FST Item Description] fs0.[Is Fraction] , fs0.[Fraction Part] , COALESCE(fs9.[FST Item Child Code] , fs8.[FST Item Child Code] , fs7.[FST Item Child Code] , fs6.[FST Item Child Code] , fs5.[FST Item Child Code] , fs4.[FST Item Child Code] , fs3.[FST Item Child Code] , fs2.[FST Item Child Code] , fs1.[FST Item Child Code] , fs0.[FST Item Child Code] , fs0.[FST Item Code]) AS [FST Item Child Code] , fs0.[Flag] * ISNULL(fs1.[Flag],1) * ISNULL(fs2.[Flag],1) * ISNULL(fs3.[Flag],1) * ISNULL(fs4.[Flag],1) * ISNULL(fs5.[Flag],1) * ISNULL(fs6.[Flag],1) * ISNULL(fs7.[Flag],1) * ISNULL(fs8.[Flag],1) * ISNULL(fs9.[Flag],1) AS [Flag] FROM #FST_Structure fs0 LEFT JOIN #FST_Structure fs1 ON fs0.[FST Schema Code] - fs1.[FST Schema Code] AND fs0.[FST Item Child Code] = fs1.[FST Item Code] LEFT JOIN #FST_Structure fs2 ON fs1.[FST Schema Code] = fs2.[FST Schema Code] AND fs1.[FST Item Child Code] = fs2.[FST Item Code] LEFT JOIN #FST_Structure fs3 ON fs2.[FST Schema Code] = fs3.[FST Schema Code] AND fs2.[FST Item Child Code] = fs3.[FST Item Code] LEFT JOIN #FST_Structure fs4 ON fs3.[FST Schema Code] - fs4.[FST Schema Code] AND fs3.[FST Item Child Code] - fs4.[FST Item Code] LEFT JOIN #FST_Structure fs5 ON fs4.[FST Schema Code] = fs5.[FST Schema Code] AND fs4.[FST Item Child Code] = fs5.[FST Item Code] LEFT JOIN #FST_Structure fs6 ON fs5.[FST Schema Code] = fs6.[FST Schema Code] AND fs5.[FST Item Child Code] = fs6.[FST Item Code]

WITH FST Structure AS

SELECT DISTINCT fs0.[FST Schema Code] , fs0.[FST Schema Description] , fS0.[FST Item Code]

-- Flatten formulas 9 levels deep

iąbs Transform in Spark-SQL notebook



PBIG

POWER BI GEBRUIKERSGROE

iąbs **Transform in Power Query**



FST Logic [15]	FST Formula: Ranges	
📰 FST Formula: Indexed	lat	
📰 FST Formula: No Formulas	Source = #"FST Formula: Indexed",	
FST Formula: Ranges	<pre>#"Filtered FST Type = F" = Table.SelectRows(#"Removed Other Columns 1" = Table.SelectColumns 1" = Table.SelectColum</pre>	<pre>source, each ([FST Type] = "F")), umns(#"Filtered FST Type = F",{"FST Schema Code", "FST Item</pre>
EST Formula: Plus	#"Added Is_Range" = Table.AddColumn(#"Removed	Other Columns 1", "Is_Range", each Text.Contains([FST Form
EST Formula: Minus	<pre># Filtered is_kange = FRUE = Fable.SelectRO #"Removed Is_Range" = Table.RemoveColumns(#"</pre>	<pre>iltered Is_Range = TRUE";{"Is_Range"});</pre>
EST Formula: Division	<pre>#"Added Range_From" = Table.AddColumn(#"Remov #"Added Range To" = Table.AddColumn(#"Added</pre>	red Is_Range", "Range_From", each Text.From([FST Schema Code Range From", "Range To", each Text.From([FST Schema Code]) &
	#"Added FST_In_Range" = Table.AddColumn(#"Ad	<pre>led Range_To", "FST_In_Range", (R) => Table.SelectRows(#"FST</pre>
	<pre># Expanded FSI_In_Kange = Table.ExpandTable #"Removed Other Columns 2" = Table.SelectColumns</pre>	.orumn(# Added FST_In_Range , FST_In_Range , { FST_Key }, { mnns(#"Expanded FST_In_Range",{"FST_Key", "Child_FST_Key"}),
FST Formula: Level 01	<pre>#"Added Calculation_Factor" = Table.AddColumn #"Added Is Fraction" = Table.AddColumn(#"Add</pre>	n(#"Removed Other Columns 2", "Calculation_Factor", each 1),
FST Formula: Level 02	#"Added Fraction_Part" = Table.AddColumn(#"Ad	<pre>ided Is_Fraction", "Fraction_Part", each "NUMERATOR")</pre>
E FST Formula: Level 03	in #"Added Fraction_Part"	EST Formula: Level 04
FST Formula: Level 04		
📰 FST Formula: Level 05		<pre>let Source = #"FST Formula: Result",</pre>
📰 FST Formula: Level 06		<pre>#"Merged Queries" = Table.NestedJoin(Source, {"Child_FST_Key"}, #"FST_Item_Accounts: Indexed", {"F #"Removed Columns" = Table.RemoveColumns(#"Merged Queries", {"FST_Item_Accounts: Indexed"}).</pre>
📰 FST Formula: Level 07		<pre>#"Merged Queries1" = Table.NestedJoin(#"Removed Columns", {"Child_FST_Key"}, #"FST Formula: Result #"Removed Columns1" = Table RemoveColumns(#"Merged Queries1" ("child_FST_Key"})</pre>
🖌 🗾 Load Data 🚺 odel [6]		<pre>#"Removed columns1" = Table.RemoveColumns(# Herged Queries); { Child Strategy } ;; #"Expanded FST Formula: Result" = Table.ExpandTableColumns1", "FST Formula: Result #"Warned Querieso"</pre>
All Measures		<pre># Merged Querles2 = Table.NestedJoin(# Expanded FST Formula: Result , { Child_FST_key }, # FST_itt #"Removed Columns2" = Table.RemoveColumns(#"Merged Querles2",{"FST_ittem_Accounts: Indexed"}),</pre>
GLAccourts		<pre>#"Merged Queries3" = Table.NestedJoin(#"Removed Columns2", {"Child_FST_Key"}, #"FST Formula: Resul #"Removed Columns3" = Table.RemoveColumns(#"Merged Queries3",{"Child_FST_Key"}),</pre>
Gl Transa tions		<pre>#"Expanded FST Formula: Result1" = Table.ExpandTableColumn(#"Removed Columns3", "FST Formula: Resu #"Merged Queries4" = Table.NestedJoin(#"Expanded FST Formula: Result1", {"Child_FST_Key"}, #"FST_I</pre>
		<pre>#"Removed Columns4" = Table.RemoveColumns(#"Merged Queries4",{"FST_Item_Accounts: Indexed"}), #"Merged Queries5" = Table.NestedJoin(#"Removed Columns4", {"Child_FST_Key"}, #"FST Formula: Result</pre>
CL Deried		<pre>#"Removed Columns5" = Table.RemoveColumns(#"Merged Queries5",{"Child_FST_Key"}), #"Expanded FST Formula: Result2" = Table.ExpandTableColumn(#"Removed Columns5", "FST Formula: Result2")</pre>
		<pre>#"Merged Queries6" = Table.NestedJoin(#"Expanded FST Formula: Result2", {"Child_FST_Key"}, #"FST_I #"Expanded FST_Ttem Accounts: Indexed" = Table ExpandTableColumn(#"Marged Queries6" "EST_Ttem Acc</pre>
HST Items		in

iąbs Financial Statements table



FST Schema Code	FST Schema Description	FST Item Code	FST Item Description \Xi	FST Item Child Code	Calculation Flag	Is Fraction	Fraction Part	Is Multiplication V Multiplication Part	Is Factor	Factor	Account Code	FST Type
40	Financial Reporting	PL5901	EBIT / Revenue %	40~PL6150	1	1	NUMERATOR	0 LEFT	0	1	4847	F
40	Financial Reporting	PL5901	EBIT / Revenue %	40~PL6150	1	1	NUMERATOR	0 LEFT	0	1	4848	F
40	Financial Reporting	PL5901	EBIT / Revenue %	40~PL6150	1	1	NUMERATOR	0 LEFT	0	1	4848	F
40	Financial Reporting	PL5901	EBIT / Revenue %	40~PL6150	1	1	NUMERATOR	0 LEFT	0	1	4848	F
40	Financial Reporting	PL5901	EBIT / Revenue %	40~PL6150	1	1	NUMERATOR	0 LEFT	0	1	4848	F
40	Financial Reporting	PL5901	EBIT / Revenue %	40~PL6150	1	1	NUMERATOR	0 LEFT	0	1	4827	F
40	Financial Reporting	PL5901	EBIT / Revenue %	40~PL6150	1	1	NUMERATOR	0 LEFT	0	1	4827	F
40	Financial Reporting	PL5901	EBIT / Revenue %	40~PL6150	1	1	NUMERATOR	0 LEFT	0	1	4850	F
40	Financial Reporting	PL5901	EBIT / Revenue %	40~PL6150	1	1	NUMERATOR	0 LEFT	0	1	4850	F
40	Financial Reporting	PL5901	EBIT / Revenue %	40~PL6150	1	1	NUMERATOR	0 LEFT	0	1	4850	F
40	Financial Reporting	PL5901	EBIT / Revenue %	40~PL6150	1	1	NUMERATOR	0 LEFT	0	1	4850	F
10	Income Statement	PL5901	EBIT / Revenue %	10~PL1200	1	1	DENOMINATOR	0 LEFT	0	1	8000	F
10	Income Statement	PL5901	EBIT / Revenue %	10~PL1200	1	1	DENOMINATOR	0 LEFT	0	1	8000	F
10	Income Statement	PL5901	EBIT / Revenue %	10~PL1200	1	1	DENOMINATOR	0 LEFT	0	1	8000	F
10	Income Statement	PL5901	EBIT / Revenue %	10~PL1200	1	1	DENOMINATOR	0 LEFT	0	1	8000	F
10	Income Statement	PL5901	EBIT / Revenue %	10~PL1200	1	1	DENOMINATOR	0 LEFT	0	1	8400	F
10	Income Statement	PL5901	EBIT / Revenue %	10~PL1200	1	1	DENOMINATOR	0 LEFT	0	1	8400	F
10	Income Statement	PL5901	EBIT / Revenue %	10~PL1300	1	1	DENOMINATOR	0 LEFT	0	1	8010	F
10	Income Statement	PL5901	EBIT / Revenue %	10~PL1300	1	1	DENOMINATOR	0 LEFT	0	1	8010	F
10	Income Statement	PL5901	EBIT / Revenue %	10~PL1300	1	1	DENOMINATOR	0 LEFT	0	1	8010	F
10	Income Statement	PL5901	EBIT / Revenue %	10~PL1300	1	1	DENOMINATOR	0 LEFT	0	1	8010	F

ią<u>b</u>s Data model

POWER BI GEBRUIKERSGROEP

Snowflake





Star

iābs DAX Logic: the measure stack

- 1. Measures that handle
 - 1. Scale (1, 1K, 1M)
 - 2. Currency translation
 - 3. Financial and non-financial data
 - 4. FST filtered by dimension
 - 5. Flags (positive / negative by either FST Item setting or minus calculation)
 - 6. FTE specific time calculations
 - 7. The FST formulas divide and multiply
 - 8. Force certain values to YTD
- 2. Measure that are used in visuals



RIG



```
'Financial Statements'[Is Multiplication] = 1
```

)

CALCULATE (

[Amount Step 6 / Time Calculations FTE],
'Financial Statements'[Multiplication Part] = "RIGHT",
'Financial Statements'[Is Multiplication] = 1

iābs Recap financial statements



- Complete variable financial statements setup
- Controller / FP&A / Reporting team do not need DAX knowledge
- Can be built in any financial data model
- Advanced stuff at the backend



Commenting

Many ways to Rome









i<mark>ą̃b</mark>s Many ways

- With hard coded text boxes
- Report embedded in Power Point + text boxes
- In-visual comments (Zebra)
- Power BI Service comments
- Teams chat
- Comments stored structurally in database
 - Via Excel/SharePoint
 - Via Power Apps
 - Via Power BI Write Back!





- Comments 'fact' table
- Can be related to dimensions, or...
- Can be completely unrelated for optimal flexibility





Data model

Comments				
Comment				
Company Code				
Dimension 1				
FST Item Code				
FST Schema Code				
Page Element				
Period				
Periodicity				
Report Page				
Scenario Code	Page Element	Scenario Code	Period •	Period
	Title	2024AC	Dec	YTD
Conapse	Visual	2024AC	Dec	YTD
	Title	2024AC	Nov	YTD
	Visual	2024AC	Nov	YTD
	Title	2024AC	Dec	YTD
	Title	2024AC	Dec	YTD

Page Element 💌	Scenario Code 💌	Period •	Periodicity •	Company Code 💌	Dimension 1	FST Schema Code 💌	FST Item Code 💌	Comment
Title	2024AC	Dec	YTD	1		40		P&L Excellent overall results
Visual	2024AC	Dec	YTD	1		40	PL1500	Strong increase vs PY and FC due to acquisition of IQBS
Title	2024AC	Nov	YTD	1		40		P&L Excellent overall results
Visual	2024AC	Nov	YTD	1		40	PL1500	Organic growth better than expected!
Title	2024AC	Dec	YTD	1		20		Balance increase in equity due to profit LY
Title	2024AC	Dec	YTD	1		30		Cash Flow strong cash position
Title	2024AC	Dec	YTD	1		60		Cash Flow strong cash position
Visual	2024AC	Dec	YTD	1		40	PL5901	EBIT % up due to acquisition of IQBS

iābs Page title: DAX measure



```
Page Title =
VAR SelectedPageElement = "Title"
VAR SelectedScenario = IF(HASONEVALUE(Scenarios[Scenario]), VALUES(Scenarios[Scenario]), "")
VAR SelectedPeriod = IF(HASONEVALUE('Time Calculations'[Month]), VALUES('Time Calculations'[Month]), "Dec")
VAR SelectedPeriodicity = [Selected Periodicity]
VAR SelectedCompany = max(Companies[Company Code])
VAR SelectedFSTSchema = MAX('Financial Statements'[FST Schema Code])
VAR Result =
CALCULATE(
LASTNONBLANK('Comments'[Comment], True())
    ,'Comments'[Page Element] = SelectedPageElement
    ,'Comments'[Scenario Code] = SelectedScenario
    ,'Comments'[Period] = SelectedPeriod
    ,'Comments'[Company Code] = SelectedCompany
    ,'Comments'[FST Schema Code] = SelectedFSTSchema
RETURN
IF(Result <> BLANK(), Result)
```

iābs Page title: Card Visual





Visual comment: DAX measure



```
Visual Comment =
VAR SelectedScenario = IF(HASONEVALUE(Scenarios[Scenario]), VALUES(Scenarios[Scenario]), "")
VAR SelectedPeriod = IF(HASONEVALUE('Time Calculations'[Month]), VALUES('Time Calculations'[Month]), "Dec")
VAR SelectedPeriodicity = [Selected Periodicity]
VAR SelectedCompany = MAX(Companies[Company Code])
VAR SelectedFSTSchema = MAX('Financial Statements'[FST Schema Code])
VAR SelectedFSTItem = MAX('Financial Statements'[FST Item Code Level 01])
VAR Result =
CALCULATE(
LASTNONBLANK('Comments'[Comment], True())
    ,'Comments'[Scenario Code] = SelectedScenario
    ,'Comments'[Period] = SelectedPeriod
    ,'Comments'[Company Code] = SelectedCompany
    ,'Comments'[FST Schema Code] = SelectedFSTSchema
    ,'Comments'[FST Item Code] = SelectedFSTItem
RETURN
IF(Result <> BLANK(), Result)
```











- Title and page comments
- Controller / FP&A / Reporting team do not need DAX knowledge
- Can be built in any financial data model
- Simple stuff at the backend



Thanks!

Any questions?



A big thank you to our amazing partners





Session Feedback



Event Feedback

