SOAR

Using POWER BI to change how you deliver the financial story

Scaling New Heights®

Originally Presented
JUNE 25TH @ 12: 00 pm

©2023 Woodard Events, LLC – All rights reserved

Today's Speaker – Ernest D Cook

- In the QuickBooks community over 20 years
  - Former QuickBooks Solution Provider
  - Database Expert
  - Add-on Programmer
  - Current QuickBooks Certifications
- Microsoft Partner
  - SQL Expert
  - Power BI Community contributor
- Presenter at the annual Scaling New Heights® conference

Founder and Principal Data Engineer, Better Idea Group

©2023 Woodard Events, LLC – All rights reserved

Learning Objectives

Delivering Information to Your Client – Becoming a Storyteller

Understand the Power BI solution and how it fits in the market

From Data to Dashboard - Getting the Data You Need:

Explore Data with Powerful Visualization and AI Tools

©2023 Woodard Events, LLC – All rights reserved

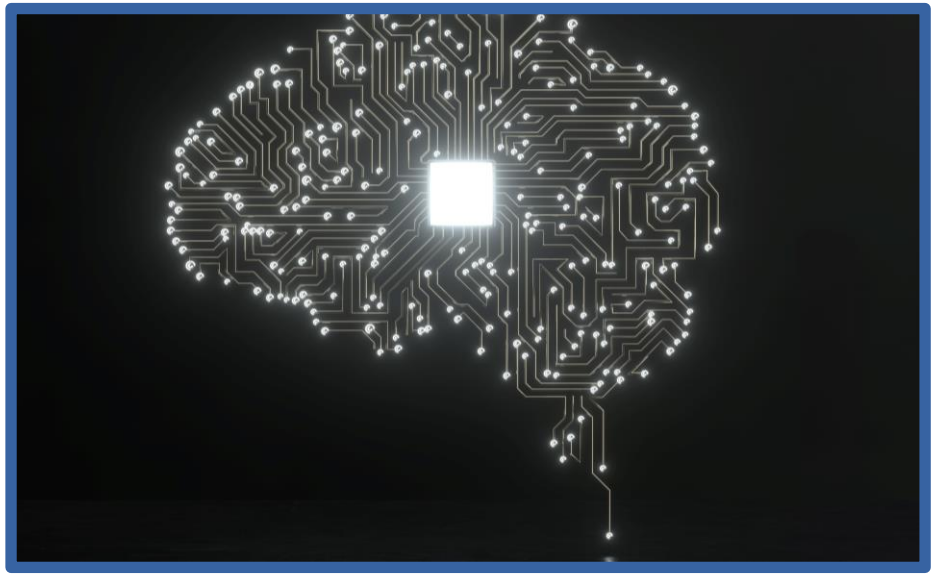
The key is to use the right tools as a storyteller

Use your knowledge of the business and clues about its progress to help them understand driver

©2023 Woodard Events, LLC – All rights reserved

How Are Your Client's Brains Wired?

- Visual Learners are Individuals who prefer to take in their information visually



- Auditory learners are individuals who learn better when they take in information in auditory form when it is heard or spoken.

- Reading/writing learners consume information best when it's in words, whether that's by writing it down or reading it

Source: https://bau.edu/blog/types-of-learning-styles/#:~:text=use%20of%20them.-,Visual%20learning%20style,such%20as%20patterns%20and%20shapes.

©2023 Woodard Events, LLC – All rights reserved

3 Pillars of telling the story to the business

Key facts to focus on

- Dashboards

Detailed financials

- Tabular reports

Discovery and Analysis

- Analyze in Excel

©2023 Woodard Events, LLC – All rights reserved

Financial Reporting Tool vs Reporting Platform

Scaling New Heights®

©2023 Woodard Events, LLC – All rights reserved

Financial Reporting Tool

Key aspects

- Primarily focused on financial data
- Typically do not bring in other data or only very minimally
- Frequently reporting apps designed for a single accounting system assume the user is using the software a standard way

Examples include:

Fathom

Qvinci®

Jirav

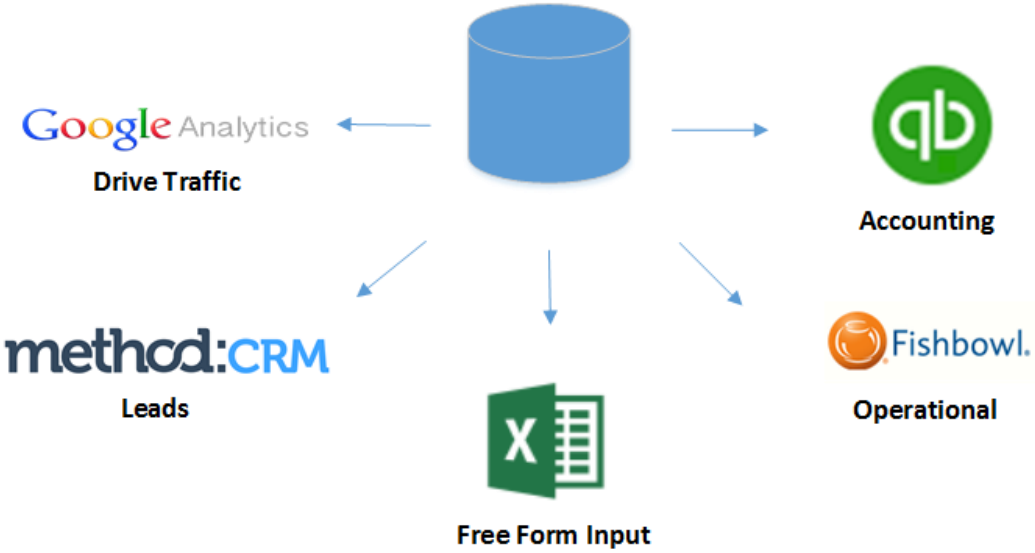
REACHREPORTING

©2023 Woodard Events, LLC – All rights reserved

Analytics and Business Intelligence Platform

Key aspects

- Open support for all information
- Typically brings in data from multiple locations
- Frequently require more technical knowledge than financial reporting application



Examples include:

Qlik®

Used in QBAR

DOMO

+ableau

Power BI

sisense

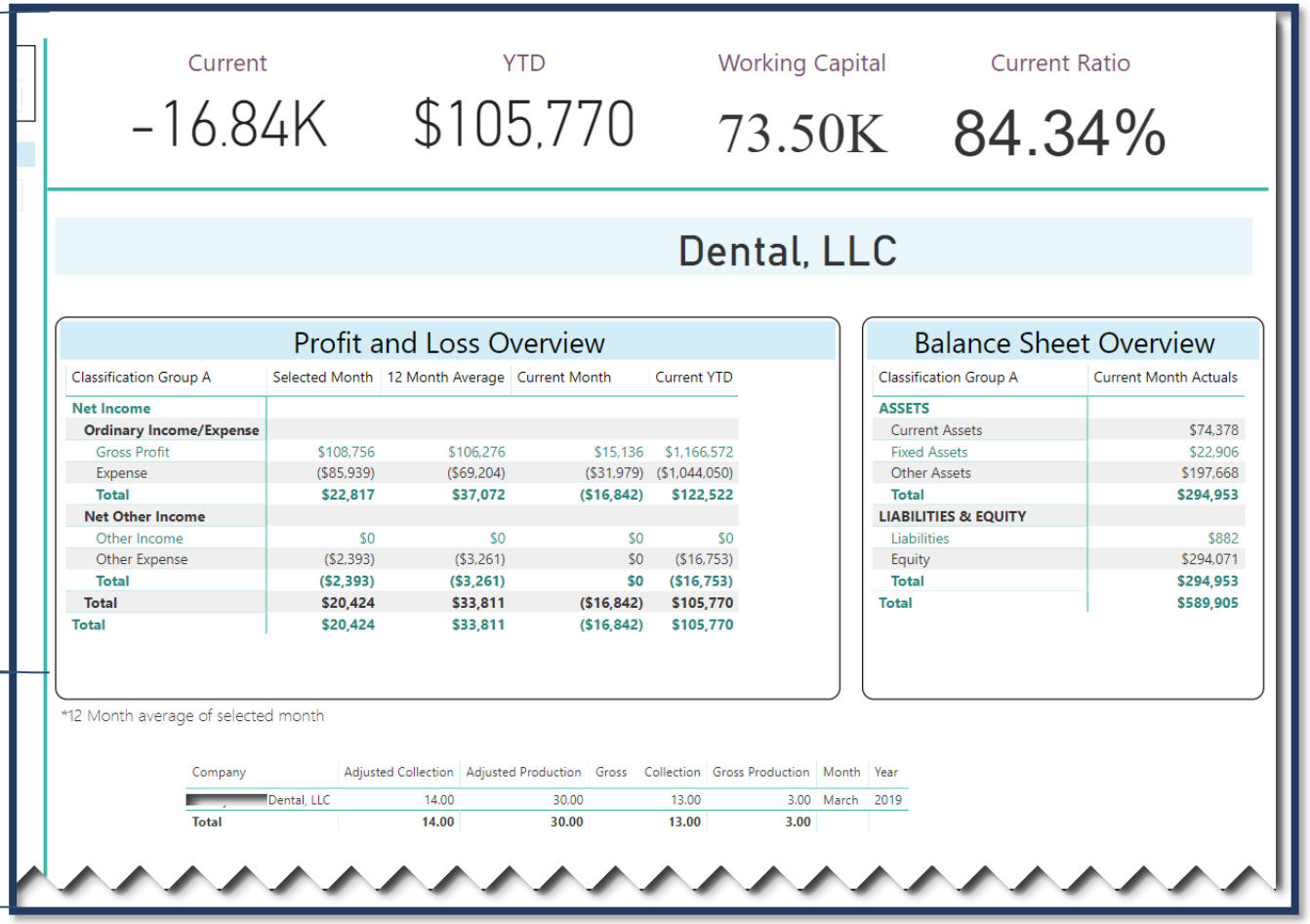
MicroStrategy®

©2023 Woodard Events, LLC – All rights reserved

Example of mixed data – Dental practice

Financial

Operational



Current	YTD	Working Capital	Current Ratio
-16.84K	$105.770	73.50K	84.34%

Dental, LLC

Profit and Loss Overview

Classification Group A	Selected Month	12 Month Average	Current Month	Current YTD
Net Income				
Ordinary Income/Expense				
Gross Profit	$108,756	$106,276	$15,136	$1,166,572
Expense	($85,939)	($69,204)	($31,979)	($1,044,050)
Total	**$22,817**	**$37,072**	**($16,842)**	**$122,522**
Net Other Income				
Other Income	$0	$0	$0	$0
Other Expense	($2,393)	($3,261)	$0	($16,753)
Total	**($2,393)**	**($3,261)**	**$0**	**($16,753)**
Total	**$20,424**	**$33,811**	**($16,842)**	**$105,770**
Total	**$20,424**	**$33,811**	**($16,842)**	**$105,770**

Balance Sheet Overview

Classification Group A	Current Month Actuals
ASSETS	
Current Assets	$74,378
Fixed Assets	$22,906
Other Assets	$197,668
Total	**$294,953**
LIABILITIES & EQUITY	
Liabilities	$882
Equity	$294,071
Total	**$294,953**
Total	**$589,905**

*12 Month average of selected month

Company	Adjusted Collection	Adjusted Production	Gross Collection	Gross Production	Month	Year
[redacted] Dental, LLC	14.00	30.00	13.00	3.00	March	2019
Total	**14.00**	**30.00**	**13.00**	**3.00**		

©2023 Woodard Events, LLC – All rights reserved

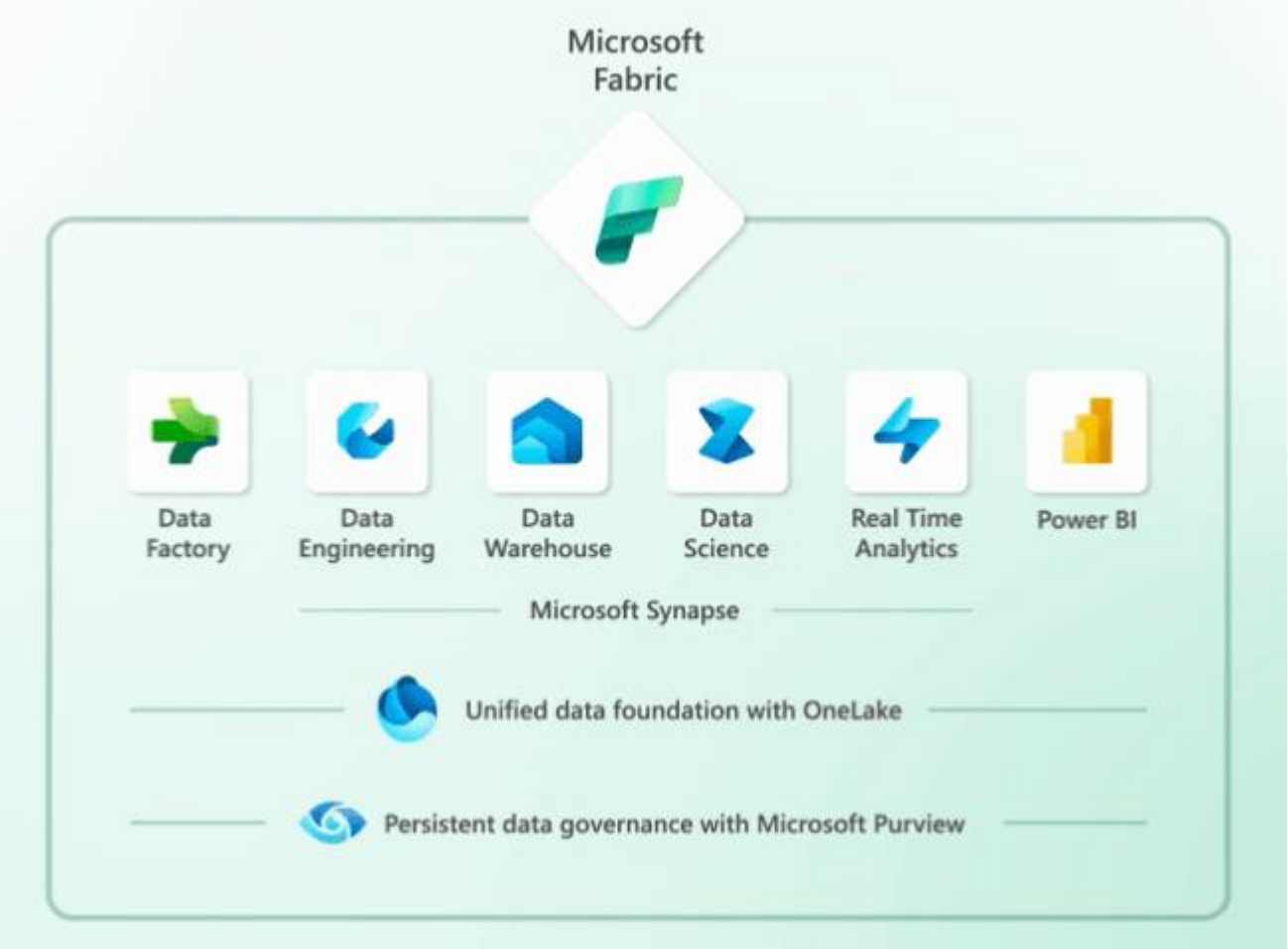
Introduction to Power BI

Scaling New Heights®

©2023 Woodard Events, LLC – All rights reserved

Before we talk about Power BI…

We need to understand Microsoft's greater infrastructure for data



©2023 Woodard Events, LLC – All rights reserved

Why Choose Power BI ?

Power BI is:

- Leader in the market
- Momentum
- Best cost / value

Monthly Pricing	Creator	Collaborator	Explorer / Premium
Microsoft	Free	$9.99	20.00
Tableau	$70	$15.00	42.00

Full Gartner Report is at:
https://www.gartner.com/doc/reprints?id=1-2CF2LJQ8&ct=230130&st=sb

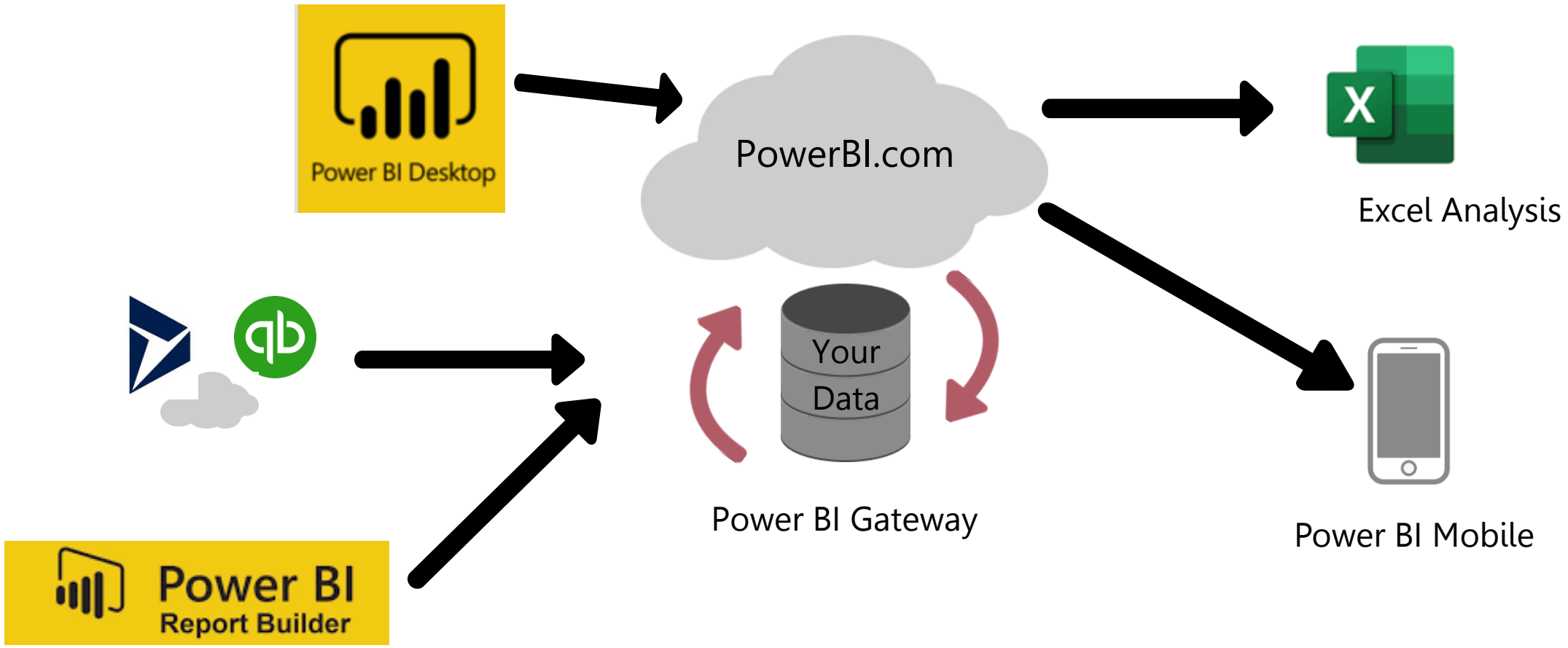
Figure 1: Magic Quadrant for Analytics and Business Intelligence Platforms

Source: Gartner

16th year in a row as a leader in BI

©2023 Woodard Events, LLC – All rights reserved

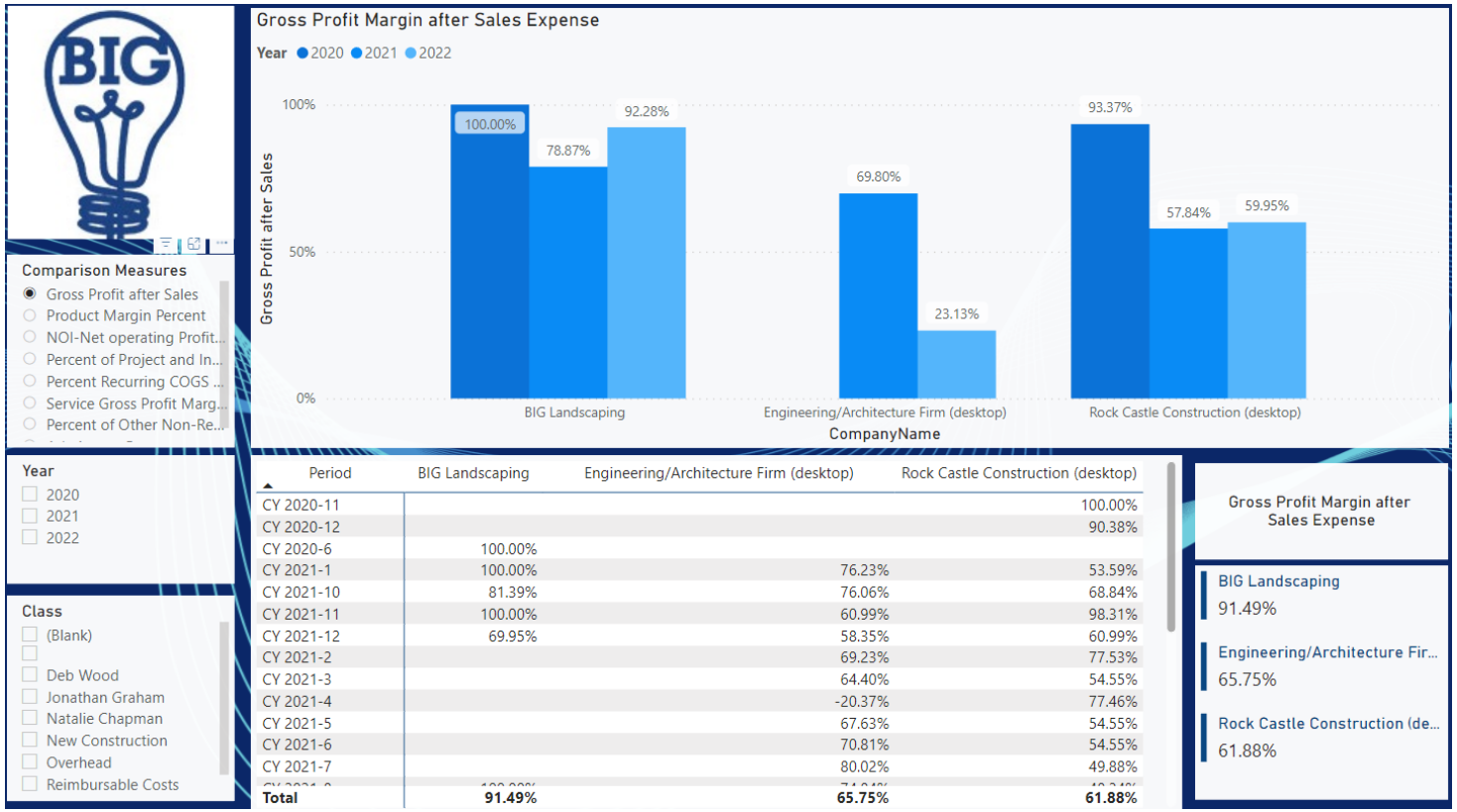
Power BI Components?



©2023 Woodard Events, LLC – All rights reserved

It does a lot more than dashboards

- Report
- Paginated report
- Scorecard
- Dashboard
- Dataset
- Streaming dataset
- Dataflow Gen2 (Preview)
- Streaming dataflow



©2023 Woodard Events, LLC – All rights reserved

Artificial Intelligence in Power BI

Introduction into how Microsoft's integration of AI helps you do advisory work

- Smart Narrative

The smart narrative visualization helps you provide a quick text summary of visuals and reports. It provides relevant innovative insights that you can customize

- Anomalies detection

Anomaly detection helps you enhance your line charts by automatically detecting anomalies in your time series data. It also provides explanations for the anomalies to help with root cause analysis

- Key Influencers

Key influencers shows you the top contributors to the selected metric value.

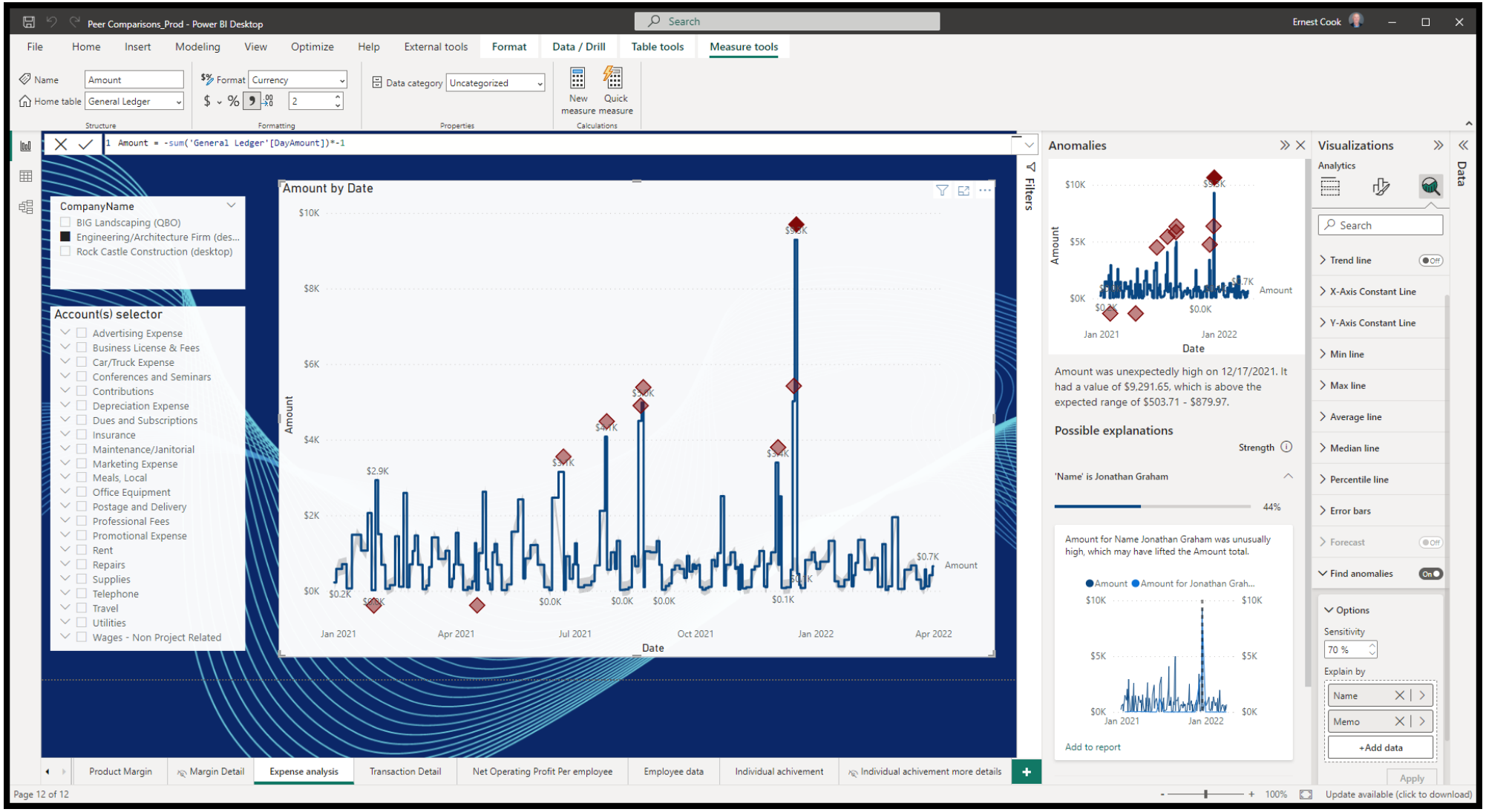
- Q&A - Natural language Queries

Let it help you write DAX and create charts

©2023 Woodard Events, LLC – All rights reserved

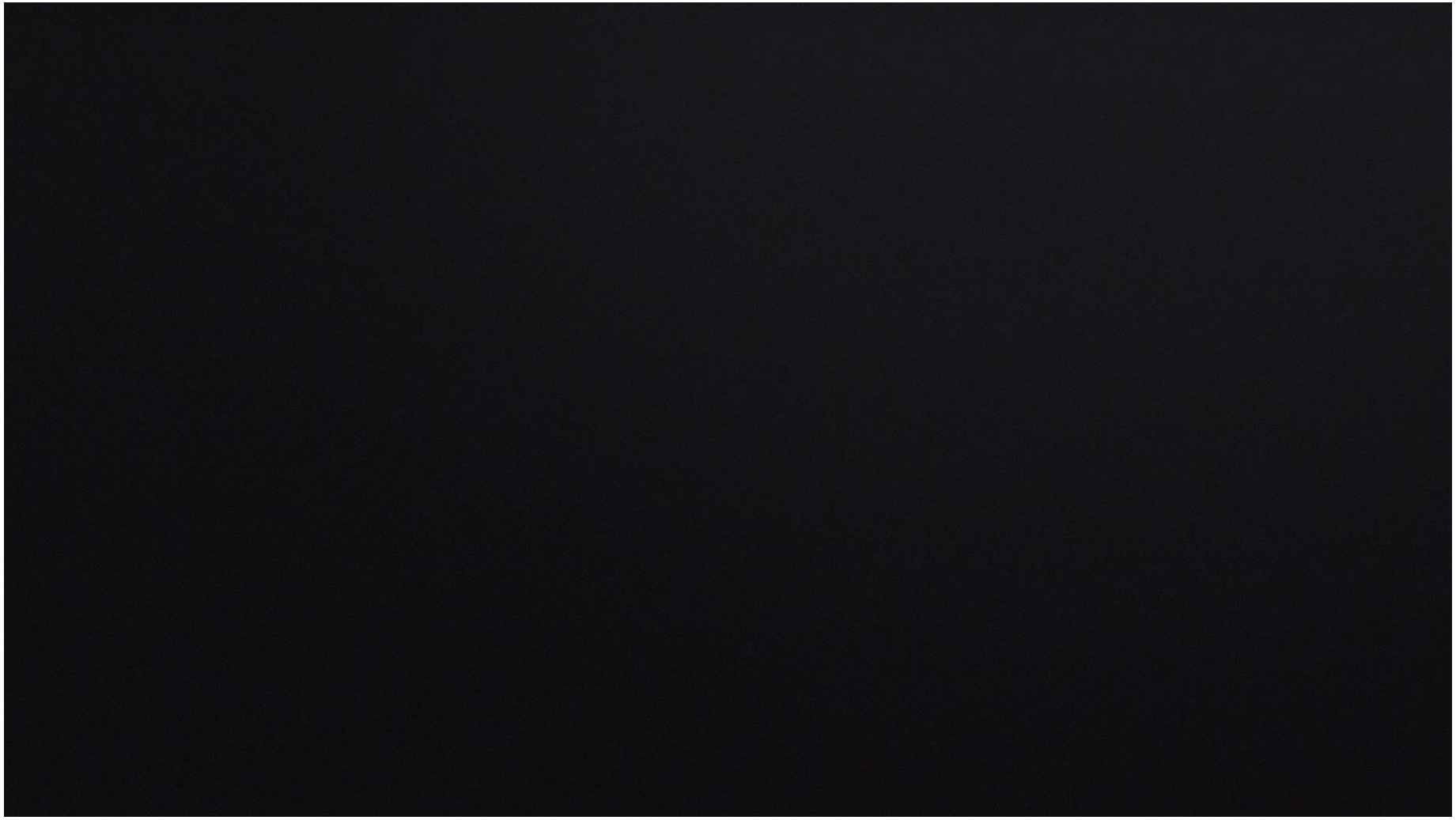
Sample Anomalies detection

Why are my expenses so high?



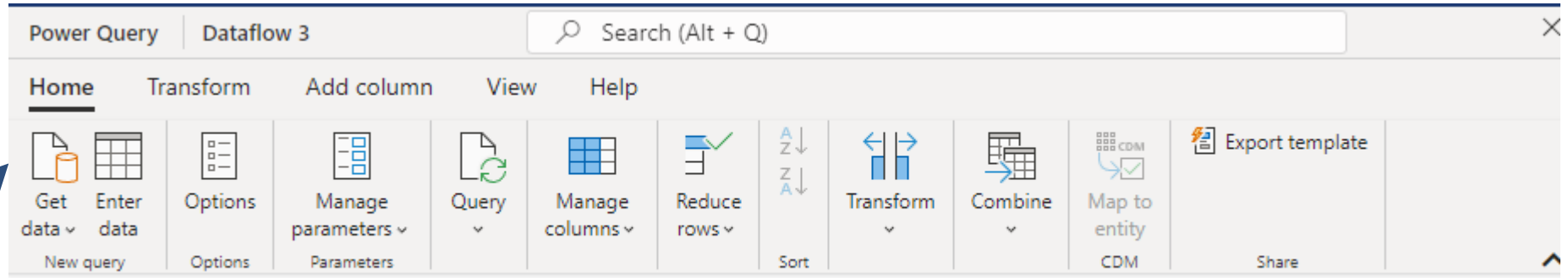
©2023 Woodard Events, LLC – All rights reserved

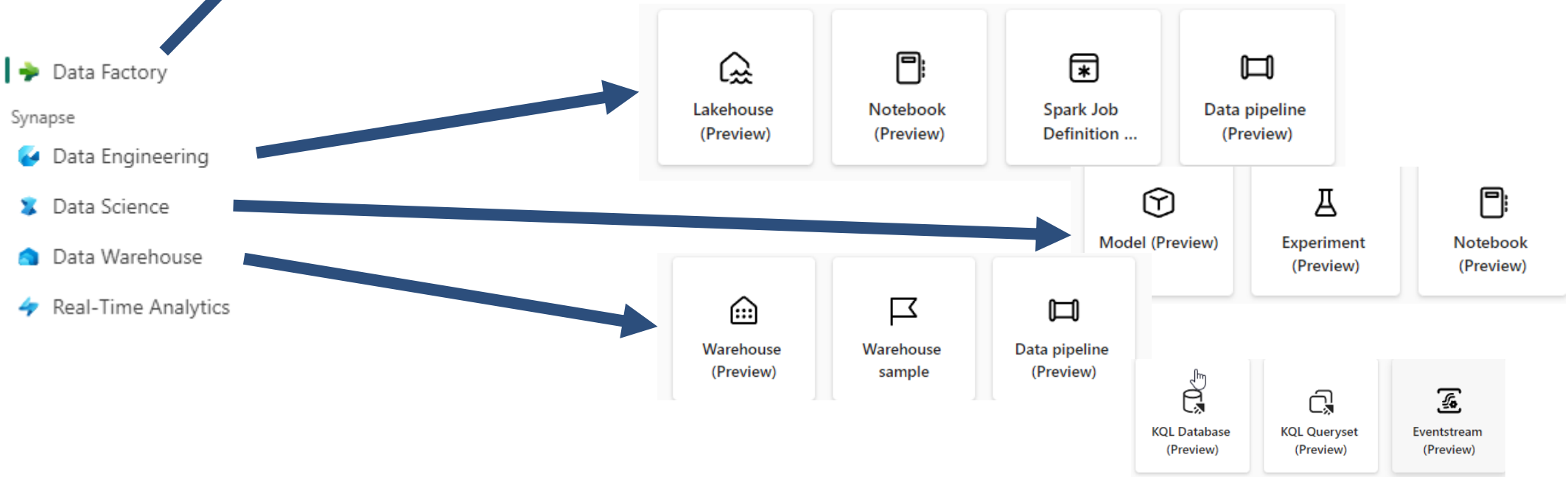
The next generation of AI in Power BI



©2023 Woodard Events, LLC – All rights reserved

Other parts of fabric to keep your eye on





©2023 Woodard Events, LLC – All rights reserved

Power BI Subscriptions

Free vs. Paid

Pro users - can **publish** to and consume content from app workspaces, share dashboards, and subscribe to dashboards and reports from other pro users

Premium Users everything in pro and

+ ability to do tabular reporting
+ ability to share with users who do not have pre-user licenses

Per-user license type comparison

Here is a list of features supported by per-user license type.

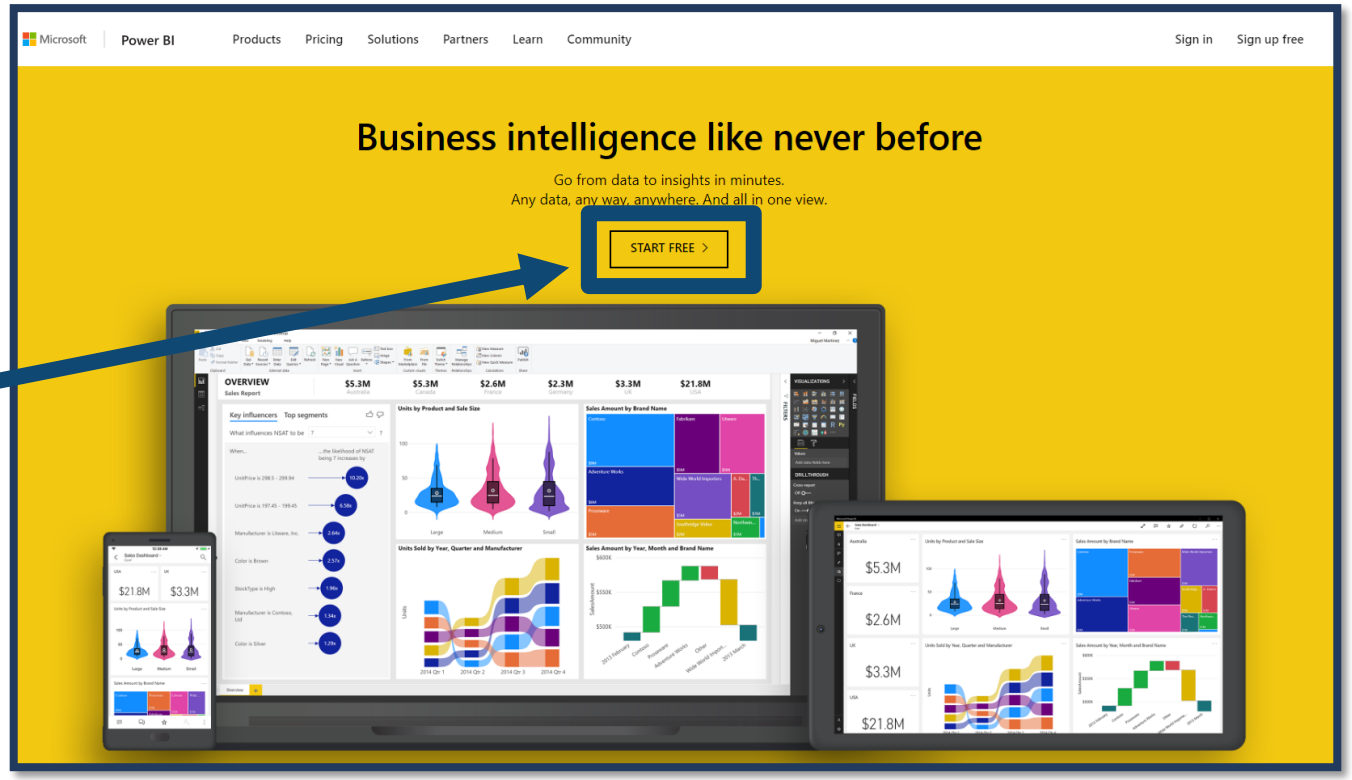
	Free	Pro
Connect to 70+ data sources	✓	✓
Publish to Web	✓	✓
Export to PowerPoint, Excel, CSV	✓	✓
Enterprise distribution		
Apps	✗	✓
Email subscriptions	✗	✓
Embed APIs and controls	✗	✓
Collaboration		
Peer-to-peer sharing	✗	✓
App workspaces	✗	✓
Analyze in Excel, analyze in Power BI Desktop	✗	✓

©2023 Woodard Events, LLC – All rights reserved

Get Access to Power BI

Download at

https://PowerBI.Microsoft.com



**Must use a business email to get free download

©2023 Woodard Events, LLC – All rights reserved

Getting From Data to Dashboard

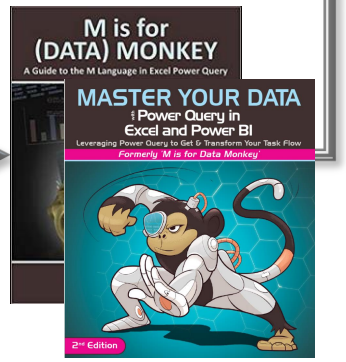
Scaling New Heights®

©2023 Woodard Events, LLC – All rights reserved

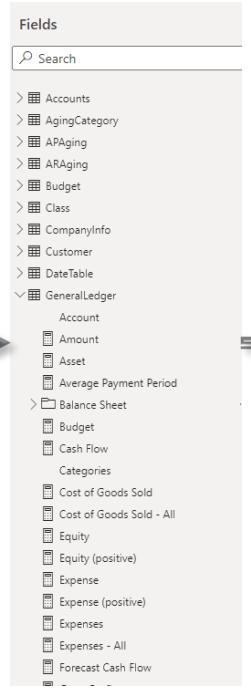
Your Journey From Data to Dashboard

Data

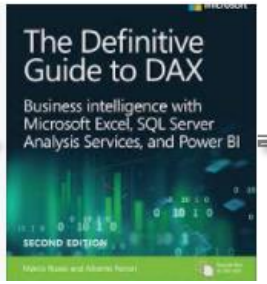
Power Query



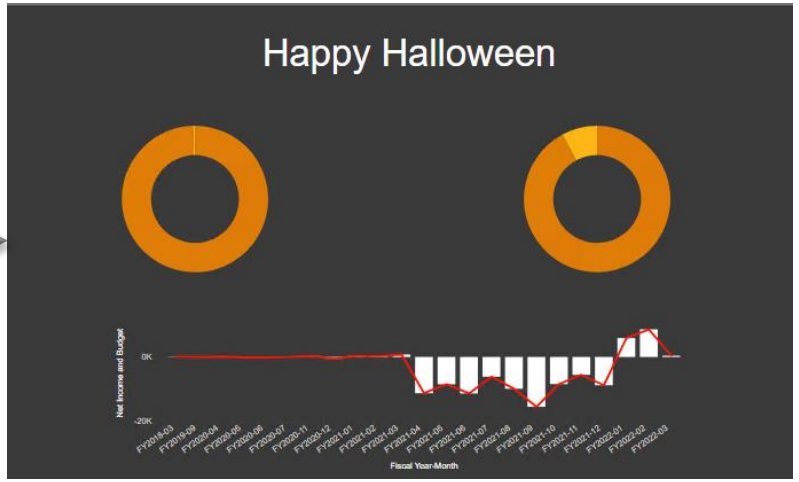
Data Model



DAX



Dashboard



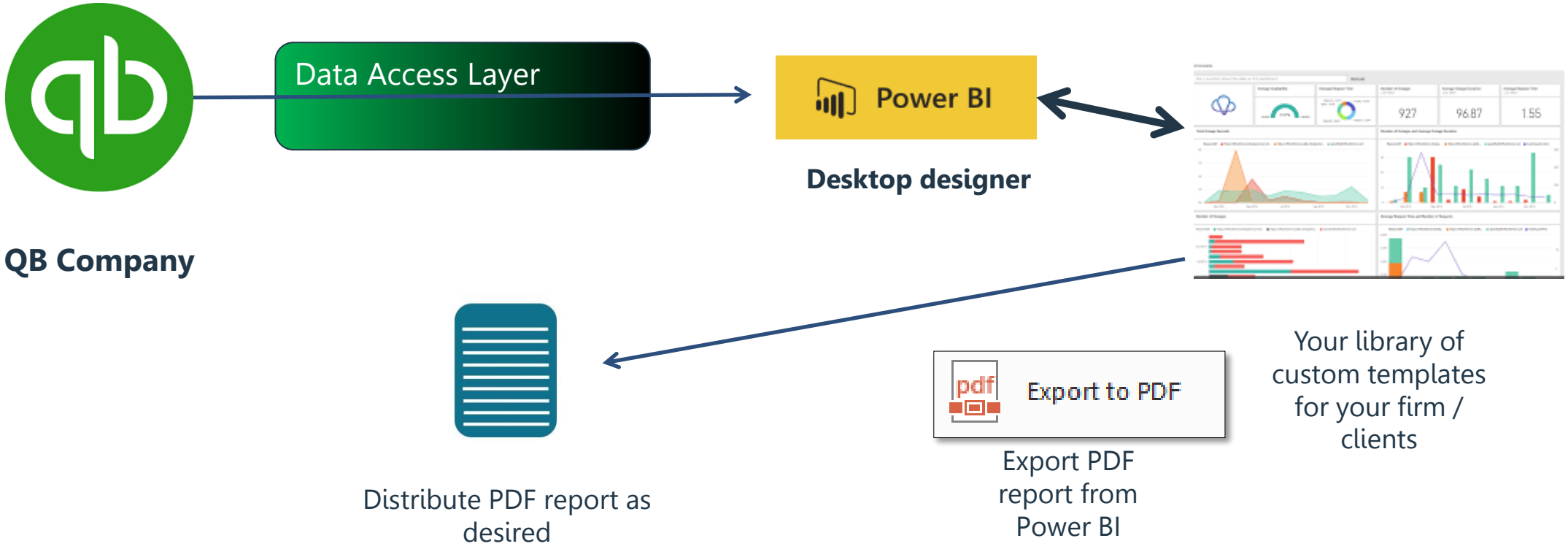
©2023 Woodard Events, LLC – All rights reserved

Take It One Step at a Time

- Don’t try and learn everything at once
- Leverage other’s efforts
- Make incremental improvements

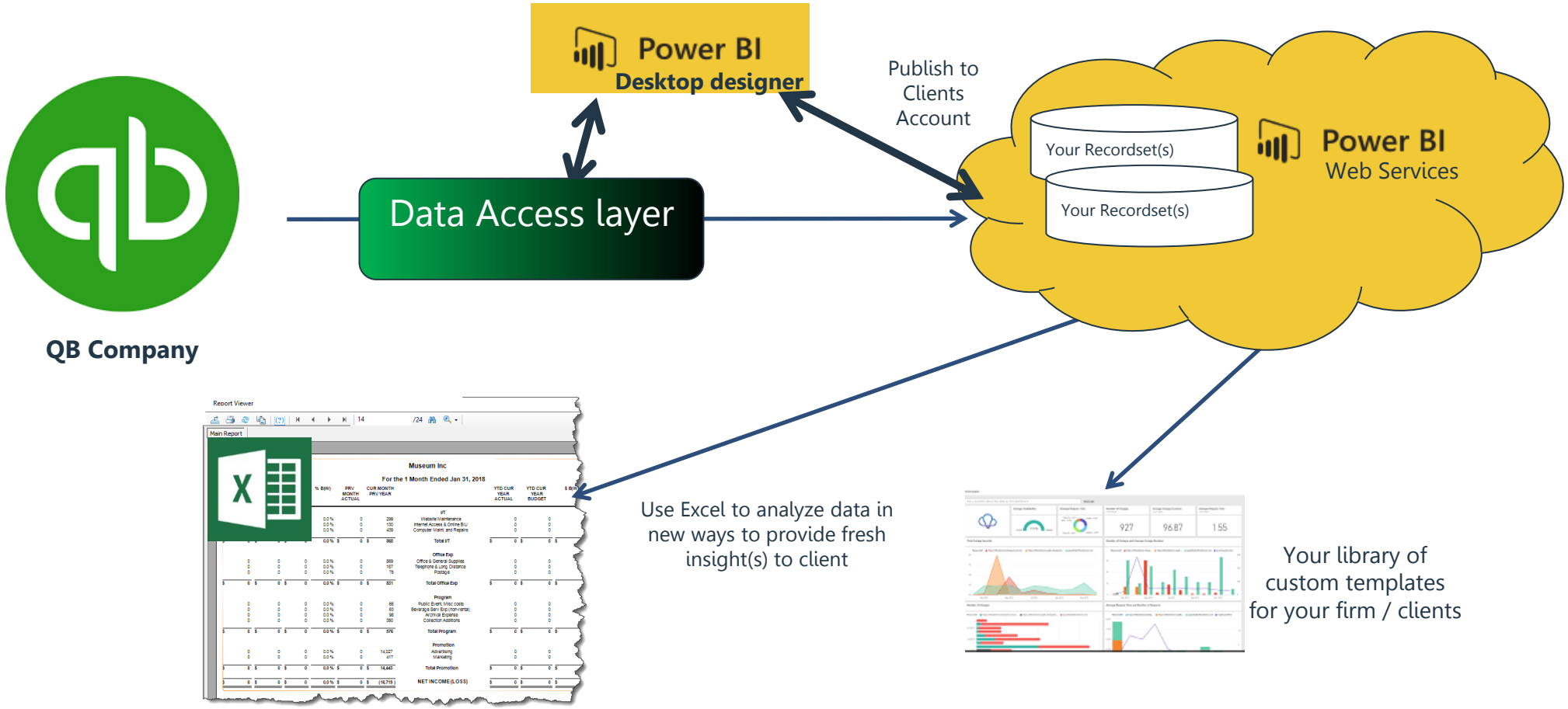
©2023 Woodard Events, LLC – All rights reserved

Phased approach: Phase 1 - using a template



©2023 Woodard Events, LLC – All rights reserved

Phased approach: Phase 2 – Shared reports



©2023 Woodard Events, LLC – All rights reserved

Step 1 - Getting QuickBooks Data into Power BI

Scaling New Heights®

©2023 Woodard Events, LLC – All rights reserved

Available Methods to Get Your Data Out of QuickBooks

Tools Based on the SDK / API

Raw Connectors (3rd party)

- QODBC Driver
- Cdata
- QXL

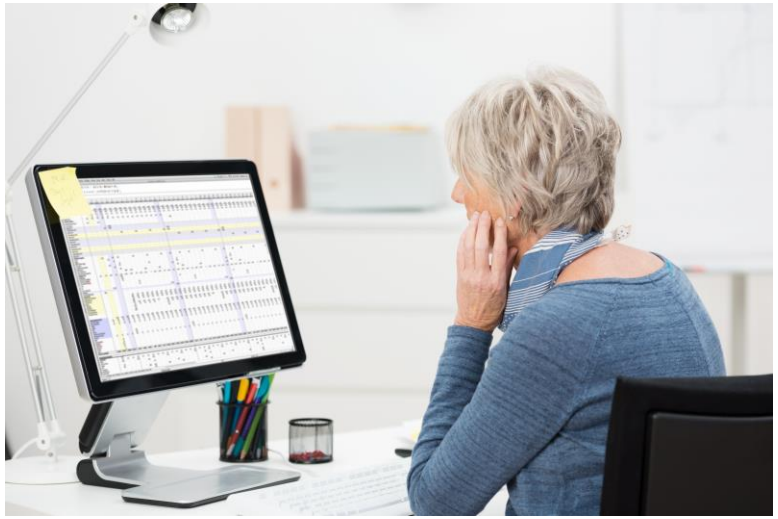
Microsoft Power BI Connector for QuickBooks Online

Data Warehouses

- Finjinni ™
- QQube ™

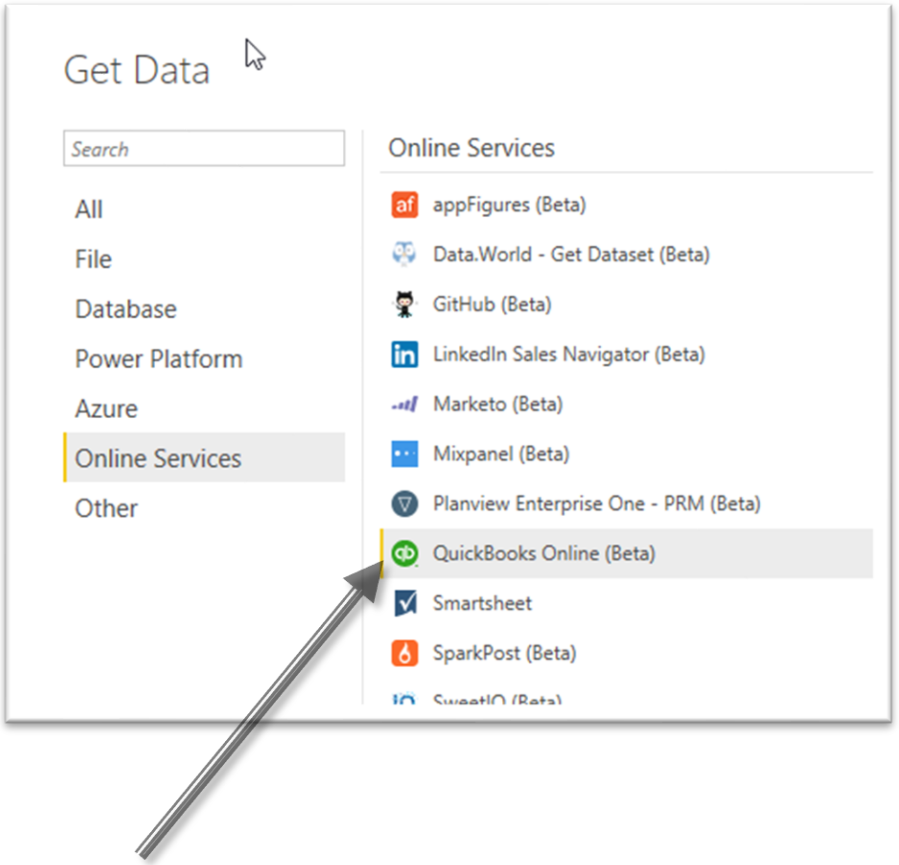
Intuit provided

- Export existing reports to Excel
- Software Developer Kit (aka API)
- Spreadsheet Sync



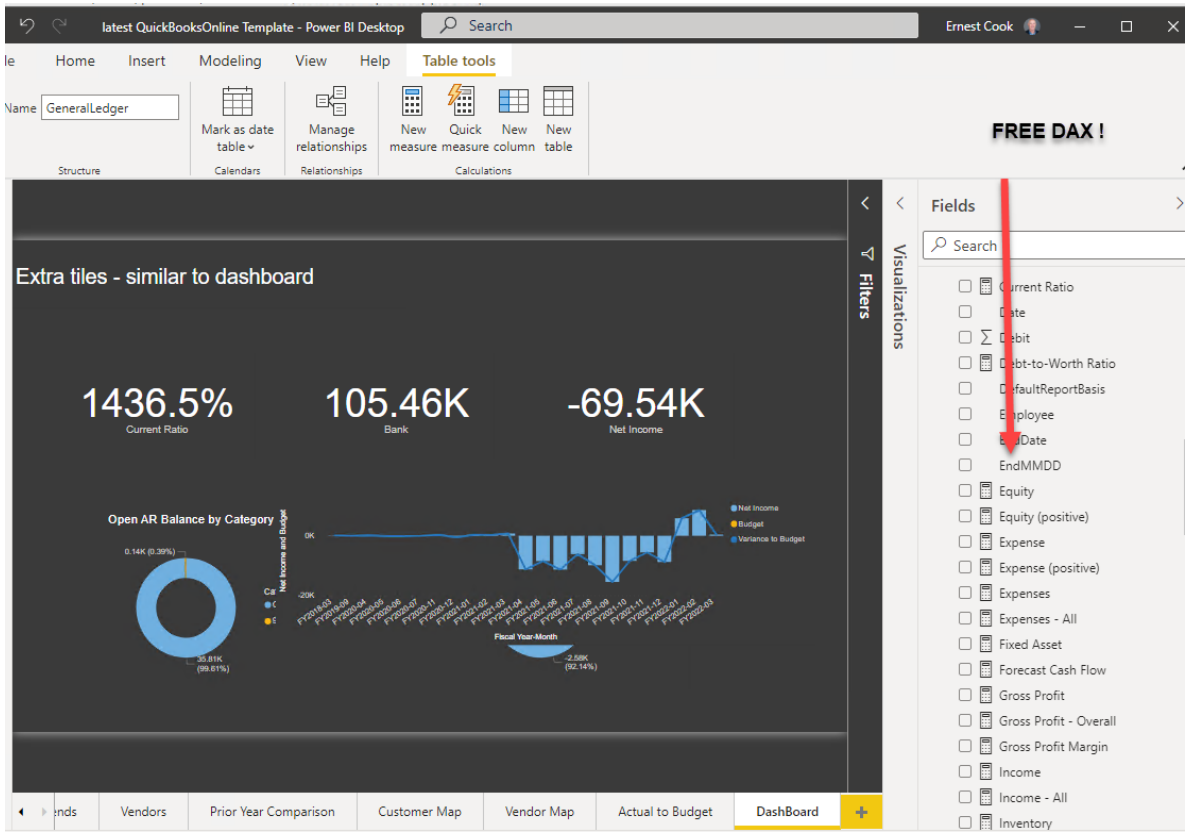
©2023 Woodard Events, LLC – All rights reserved

Microsoft Power BI Connector for QuickBooks Online



Raw data

OR

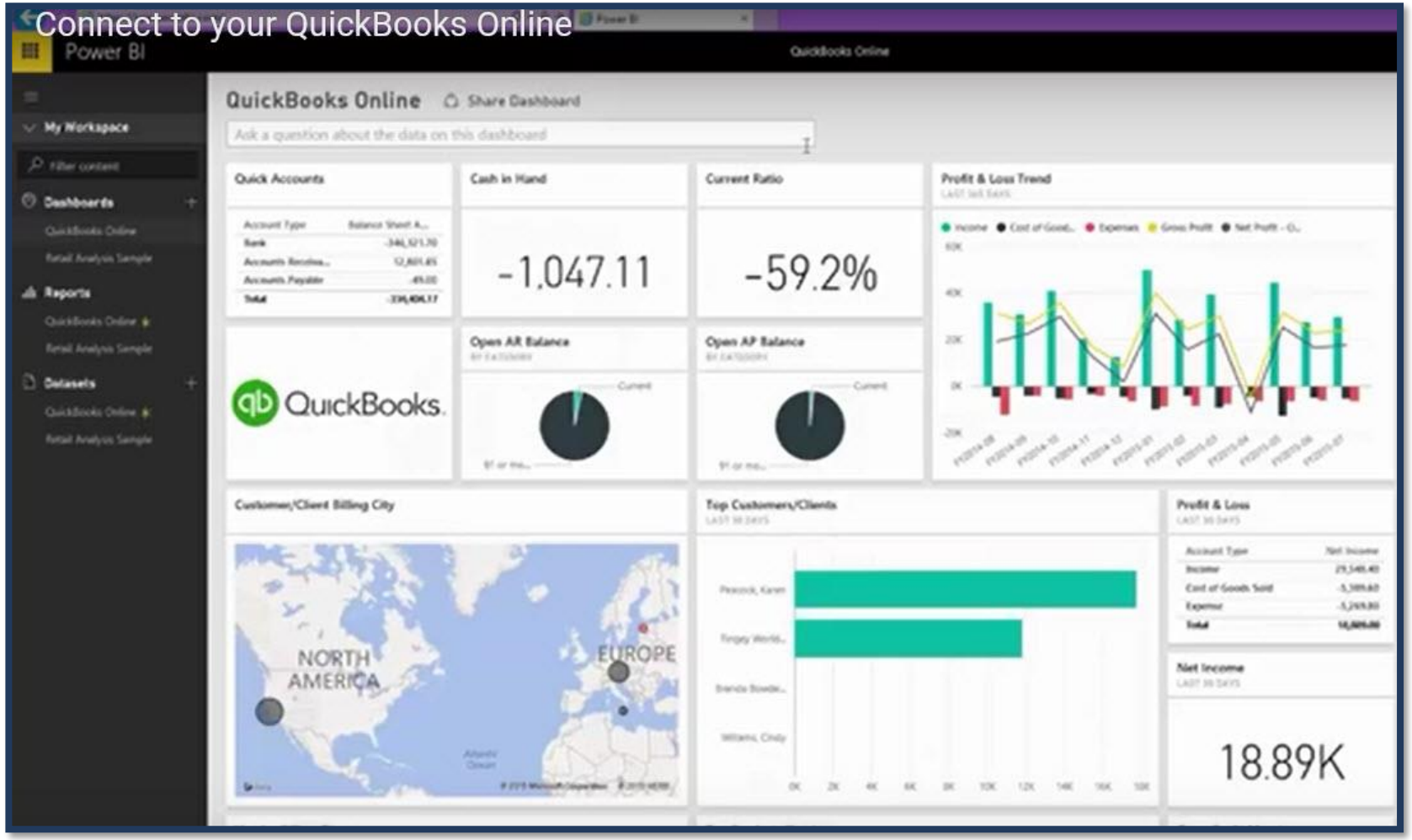


Free Template with DAX and visuals

https://docs.microsoft.com/en-us/power-bi/connect-data/service-template-apps-samples

©2023 Woodard Events, LLC – All rights reserved

Default Power BI in QuickBooks Online



©2023 Woodard Events, LLC – All rights reserved

Microsoft Connector: Pros and Cons

- **PROS**
  - Offers FREE DAX that gives you a kick start in financial reporting
- **CONS**
  - Beta only – not released for production

©2023 Woodard Events, LLC – All rights reserved

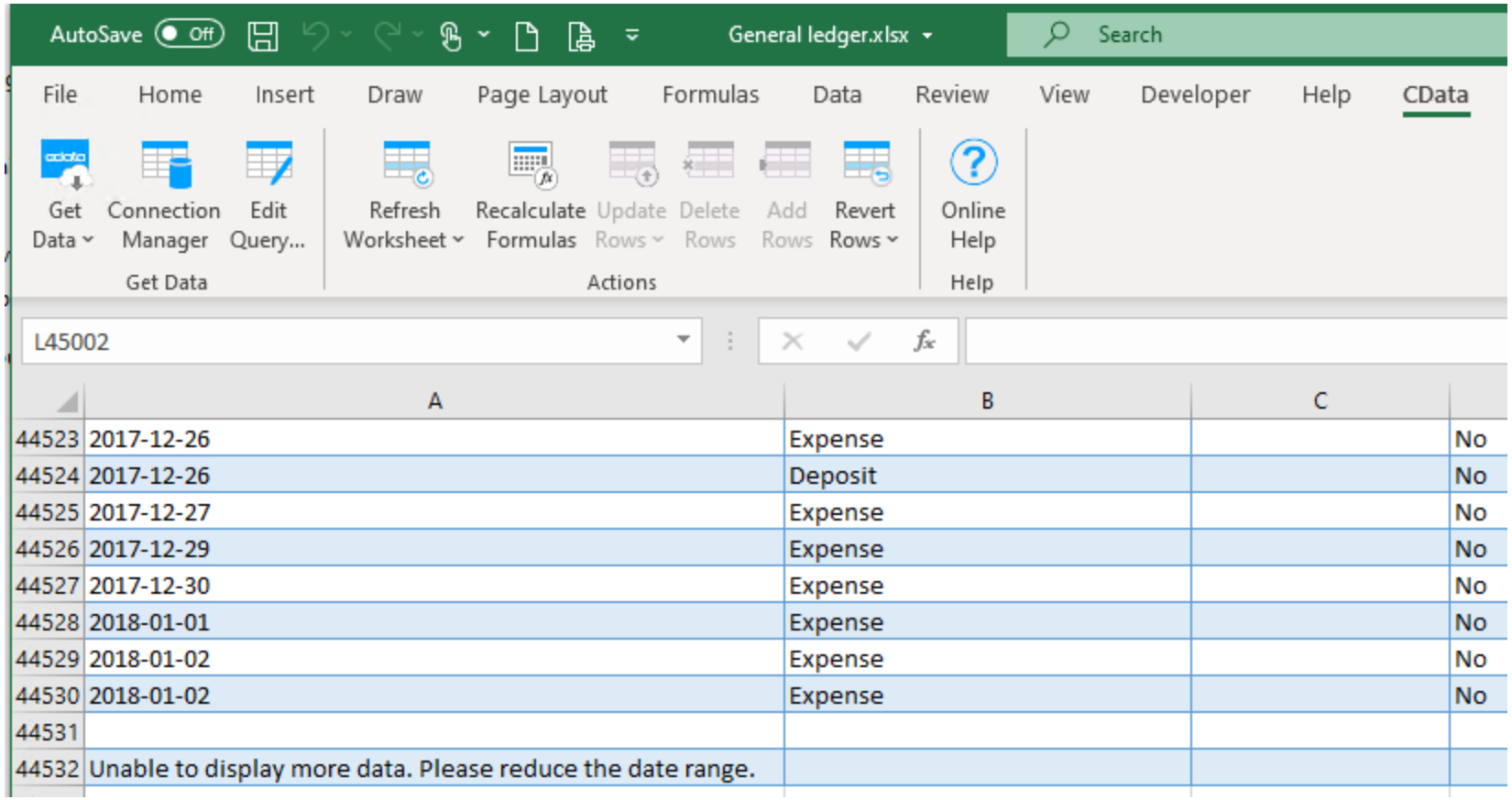
Raw Connectors: Pros and Cons

- **PROS**
  - Mature program with base of thousands
  - Offers read and write capability

- **CONS**
  - Can be slow for large queries
  - Requires knowledge of SQL and schemas to build simple financials
  - Cache may get out of sync
  - Some connectors are not supported for use with Power BI
  - Cdata has a limitation on the number of rows returned so you may have to build your own “cache” for larger files

©2023 Woodard Events, LLC – All rights reserved

Example of cdata Limitation



	A	B	C	
44523	2017-12-26	Expense		No
44524	2017-12-26	Deposit		No
44525	2017-12-27	Expense		No
44526	2017-12-29	Expense		No
44527	2017-12-30	Expense		No
44528	2018-01-01	Expense		No
44529	2018-01-02	Expense		No
44530	2018-01-02	Expense		No
44531				
44532	Unable to display more data. Please reduce the date range.			

©2023 Woodard Events, LLC – All rights reserved

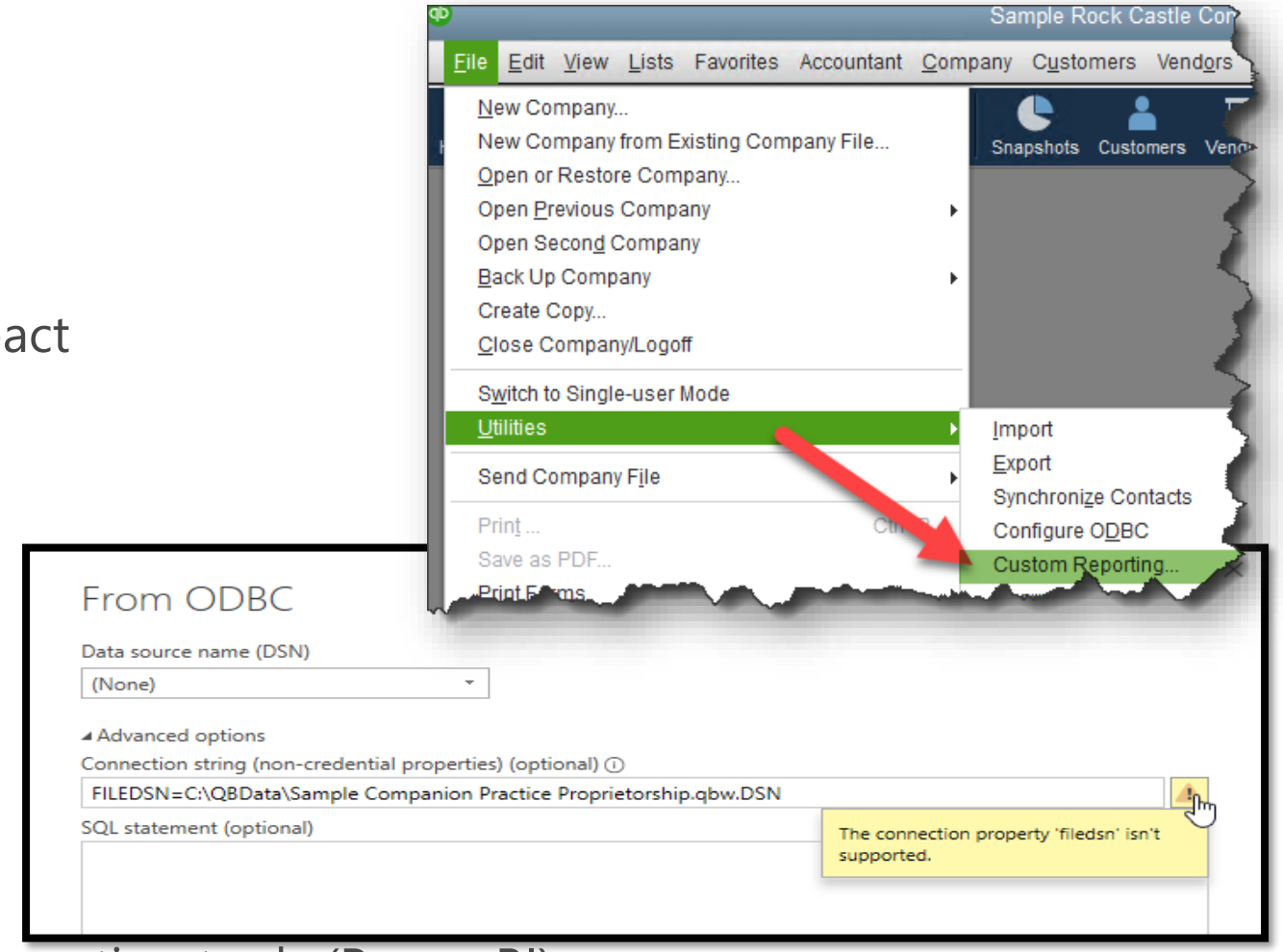
Custom Reporting Pros and Cons

PROS

- Included Free with QuickBooks Enterprise since 2006
- Direct fast access to the database
- Bypasses SDK so corruption does not impact queries
- Allows real-time reporting

CONS

- Requires QuickBooks file to be open
- Requires knowledge of reporting tools
- Requires some knowledge of SQL
- Single datafile only (no consolidation)
- File based DSN will not work with some reporting tools (Power BI)



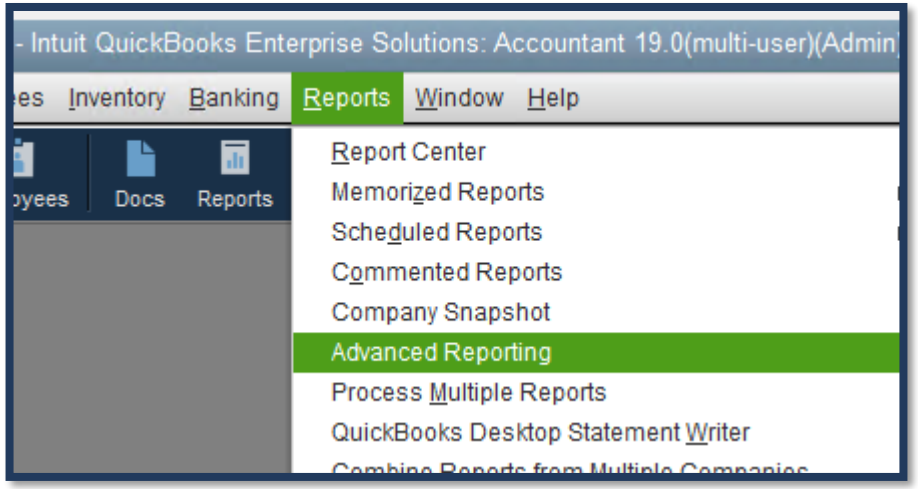
http://http-download.intuit.com/http.intuit/CMO/qbes/resources/pdfs/CustomReportingODBCImplementationGuide.pdf

©2023 Woodard Events, LLC – All rights reserved

QBAR Pros and Cons

- **PROS**
  - Included Free with QuickBooks Enterprise since 2014

- **CONS**
  - Steep learning curve for understanding QuickBooks data in the model
  - Very low adoption, low available support
  - Limited QuickBooks Data available
  - Does not allow Non-QuickBooks data to be integrated
  - Requires knowledge of one specific reporting tool (Qlik)
  - Single datafile only (no consolidation)



©2023 Woodard Events, LLC – All rights reserved

Data Warehouses: Pros and Cons

PROS

- Mature program with base of thousands
- Add-in lowers learning curve by creating SQL
- Provides easier access to more data (aggregates)
- External copy of data provides consistent reports thru work-day
- Allows you to direct access using ANY reporting tool
- Support directly

CONS

- Initial extraction
- Requires knowledge of reporting tools
- No real-time reporting

©2023 Woodard Events, LLC – All rights reserved

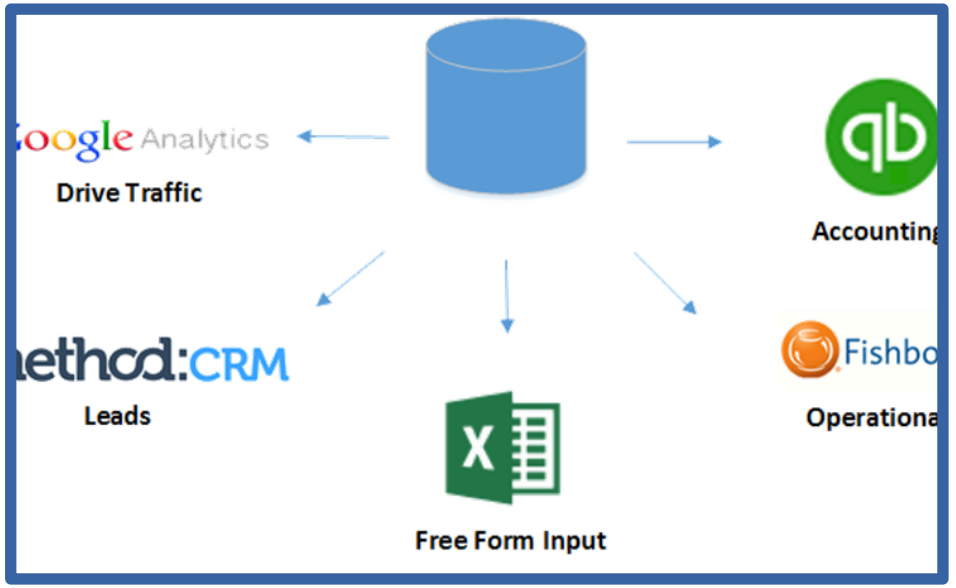
Summary of Pros and Cons

	SDK / API	QBAR	Custom Reporting	Connectors like QODBC Cdata	Data Warehouses
Widely used	X		/	X	X
Cost for tool	Free	Free	Free	$200+	$500+
Learning curve	🕐🕐🕐🕐	🕐🕐🕐	🕐🕐	🕐🕐	🕐
Data Available	📄📄	📄	📄	📄📄	📄📄📄📄📄
Multiple QB Files					+++
Speed of reports	🐢	🐇	🐇	🐢	🐇
Real time data	X		X	X	
Source	SDK	DB	DB	SDK	SDK+DB
QBO & Desktop	Different	No	No	Different	Yes

©2023 Woodard Events, LLC – All rights reserved

Include Data from Operational Systems

- Most companies have a HUGE amount of critical information outside of the accounting system. Consider:
  - Customer relationship tracking (CRM)
  - External operational systems
    - Point of Sale system(s)
    - eCommerce system(s)
    - Manufacturing system(s)
    - External payroll systems

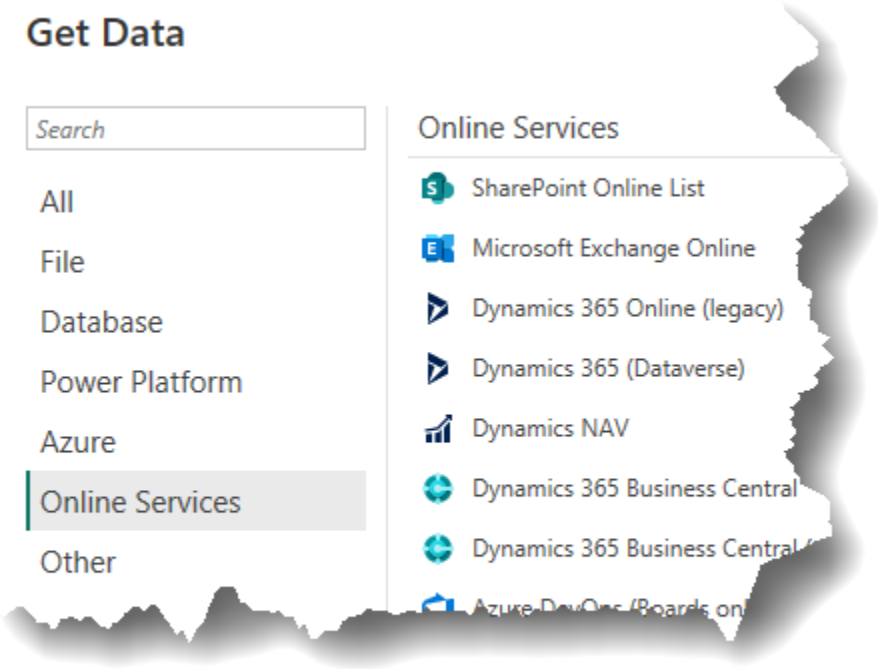


©2023 Woodard Events, LLC – All rights reserved

Connectors for Operational Systems

- Generic data connectors
  - Database - ODBC / OLE DB / SQL
  - Cloud – Azure , Odata (Open Data Protocol)
  - File based, e.g. Excel, CSV, XML, PDF

- Application specific
  - Google Analytics / Adobe Analytics
  - Mailchimp
  - Salesforce



Full list of connectors at: https://learn.microsoft.com/en-us/power-query/connectors

©2023 Woodard Events, LLC – All rights reserved

Step 2 – Building a Data Model

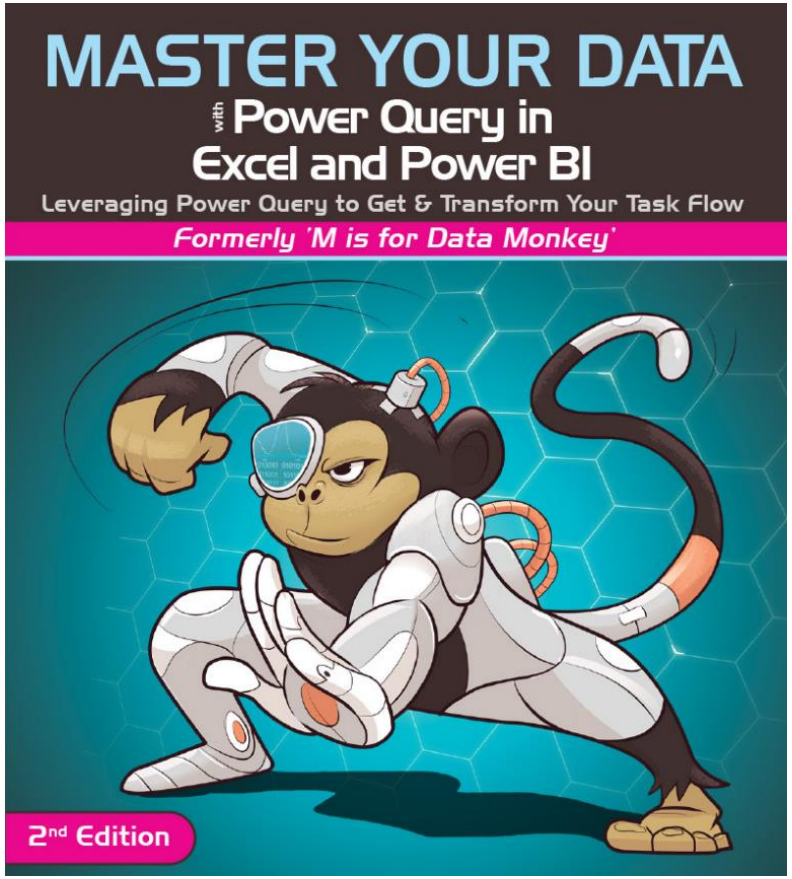
Scaling New Heights®

©2023 Woodard Events, LLC – All rights reserved

Use Power Query to build your data model

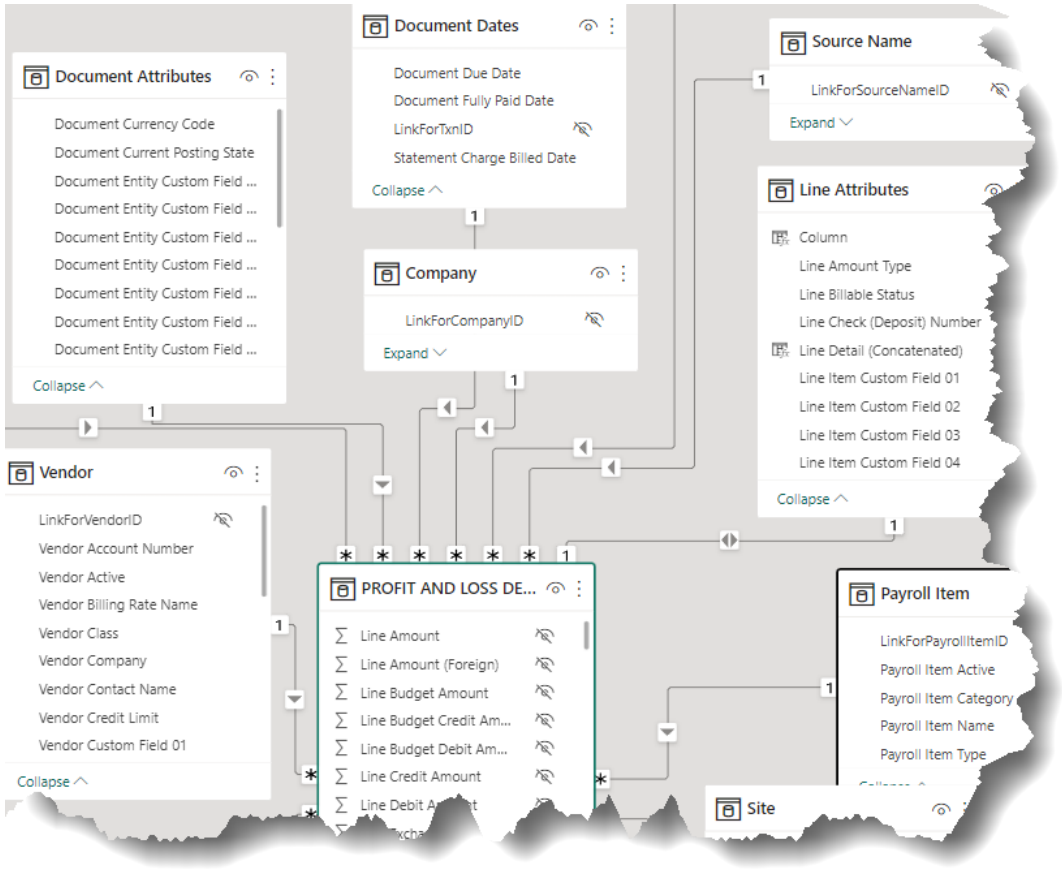
All the theories of data model design are way outside the scope of this presentation but some warnings:

- An incorrect data model can make your DAX a lot harder
- A bad model can lead to wrong results
- LEVERAGE existing models for QuickBooks



©2023 Woodard Events, LLC – All rights reserved

In general . . .



- If data is included, it should be related in some way
- All numbers should be in a single “fact” table
- Having multiple fact tables is considered risky

©2023 Woodard Events, LLC – All rights reserved

DAX before dashboard

Don’t ask customer vague questions like:

- What do you want on the dashboard?
- What measurements are important?

Do be a storyteller

- Suggest measurements based on your knowledge
- Create an initial display of the measurement

©2023 Woodard Events, LLC – All rights reserved

A simple DAX statement with a lot of uses

```
Expense = CALCULATE([Amount],
FILTER(Accounts,Accounts[Classification]="Expense"))
```

In English…

Get the [Amount] and filter the Accounts based on the Accounts[Classification] choosing only the ones equal to "Expense“ and CALCULATE the summary of all those values

©2023 Woodard Events, LLC – All rights reserved

A little more complex DAX statement

```
Trailing12M_amount = CALCULATE (
 'GeneralLedger'[Amount],
 DATESBETWEEN (
 'DateTable'[Date],
 NEXTDAY ( SAMEPERIODLASTYEAR ( LASTDATE ( 'DateTable'[Date] ) ) ),
 LASTDATE ( 'DateTable'[Date])
 )
)
```

In English…

Get the [Amount] field and filter based on the Date choosing only the ones between the date selected and the same period last year CALCULATE the summary of all those values

©2023 Woodard Events, LLC – All rights reserved

Put the two statements together

```
Trailing12M_income = CALCULATE (
    'GeneralLedger'[Net Income],
    DATESBETWEEN (
    'DateTable'[Date],
    NEXTDAY ( SAMEPERIODLASTYEAR ( LASTDATE ( 'DateTable'[Date] ) ) ),
    LASTDATE ( 'DateTable'[Date])
    )
)
```

You can use a measure in the calculate statement so, as in this example the [Net Income] for trailing 12 months will be calculated

©2023 Woodard Events, LLC – All rights reserved

Measures using measures

```
T12Profit = [T12M_PIMSincome]-[T12M_QBExpenses]
```

You can combine measures in a meaningful way

©2023 Woodard Events, LLC – All rights reserved

A Little About DAX for the SQL people in the house

new 1 | Examples of dax vs SQL.dax

```
1  /* Select * from general ledger  */
2  EVALUATE 'General Ledger'
3
4
5  /* Select * from general ledger where transactionid = 27793 */
6  evaluate
7    filter ('General Ledger','General Ledger'[TransactionID]=17793
8    )
9
10
11 /* Select pk as pk, amount as "txn Amount" from general ledger  */
12 EVALUATE
13    SELECTCOLUMNS(filter('General Ledger',
14                         'General Ledger'[TransactionID]=17793  &&
15                         'General Ledger'[ActiveFileGUID] = "48c73b9d-0794-4900-bc4d-6da9763ce03e"
16                  ),
17                  "pk", 'General Ledger'[pk]
18                  ,"Txn Amount" , 'General Ledger'[Amount]
19
20 /* Select ActiveFileGUID, sum(amount) as "Amount" from general ledger  */
21 EVALUATE
22  SUMMARIZECOLUMNS(
23         'General Ledger'[ActiveFileGUID],
24         "Amount", sum('General Ledger'[Amount])
25
26         )
```

©2023 Woodard Events, LLC – All rights reserved

Step 3 – Dashboard

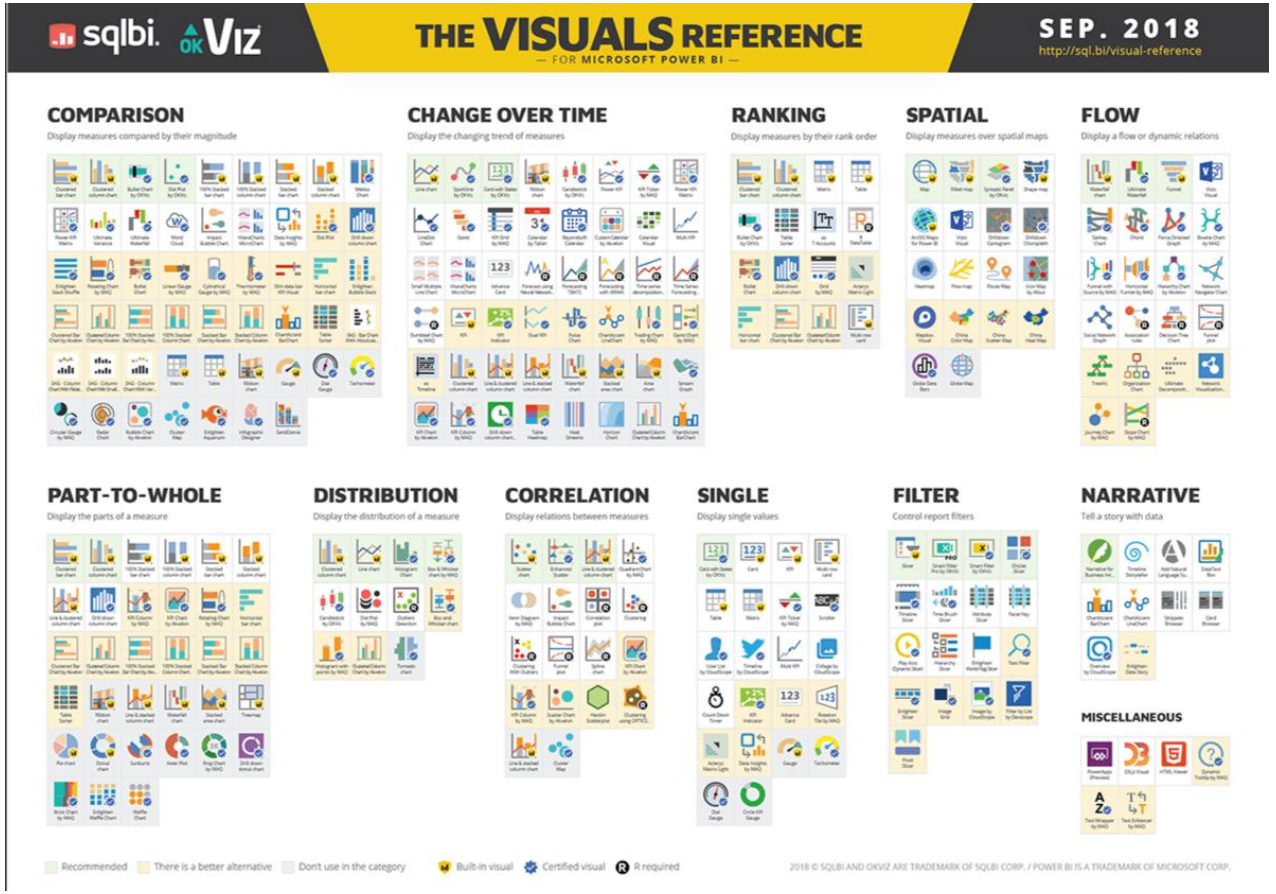
Scaling New Heights®

©2023 Woodard Events, LLC – All rights reserved

Go from DAX to Dashboard with Visualizations

- Hundreds of different ways to display your data

- Options include:
  - Standard visuals
  - App store Visuals
  - Custom created visuals

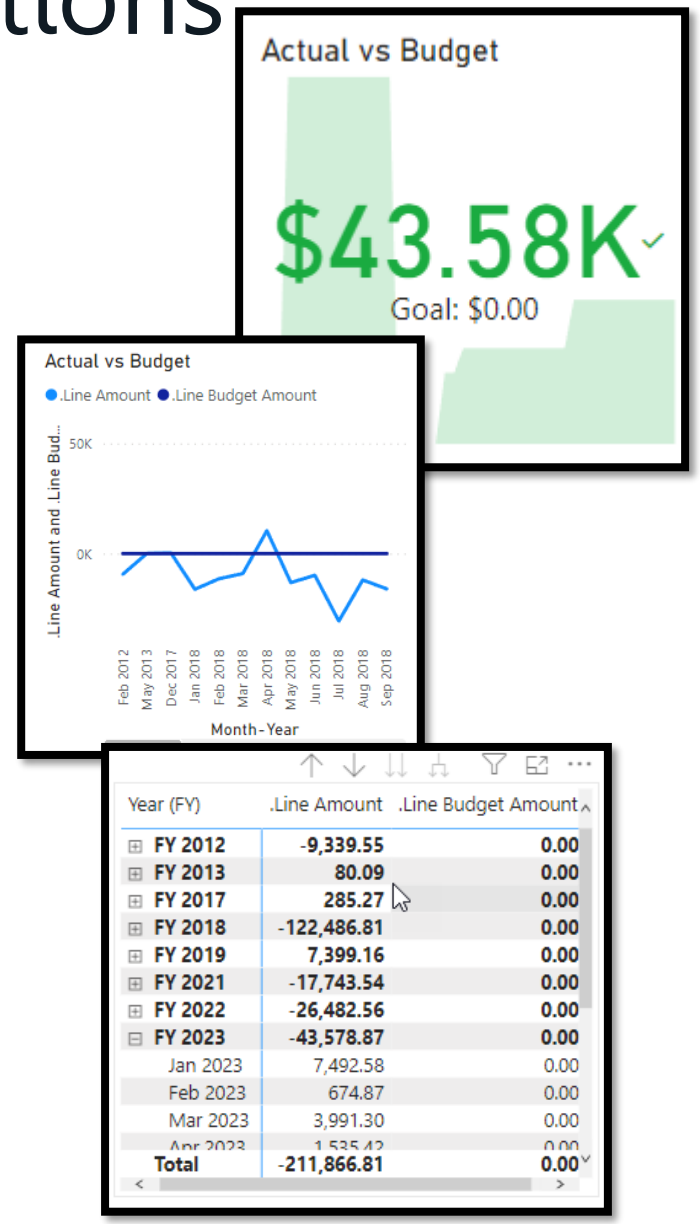


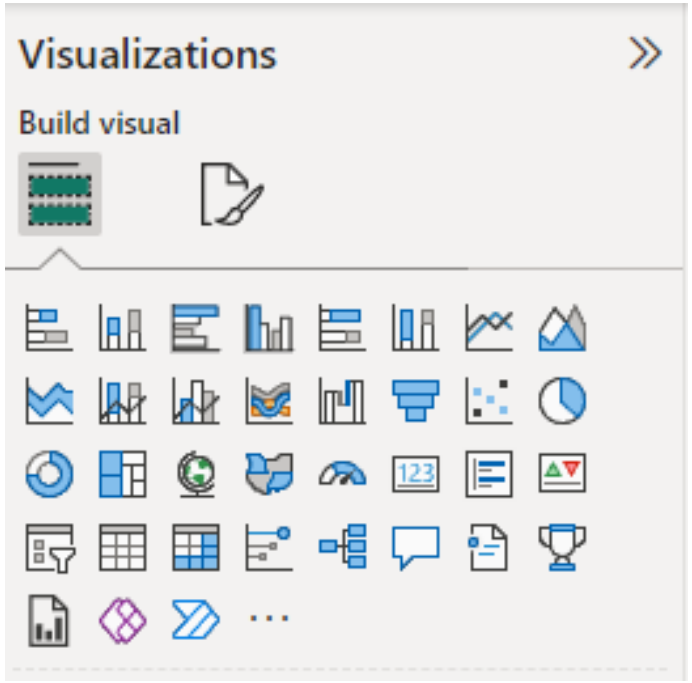
Buy this reference at: https://www.sqlbi.com/ref/power-bi-visuals-reference/

©2023 Woodard Events, LLC – All rights reserved

Standard Visualizations

- KPI
- Line Chart
- Matrix

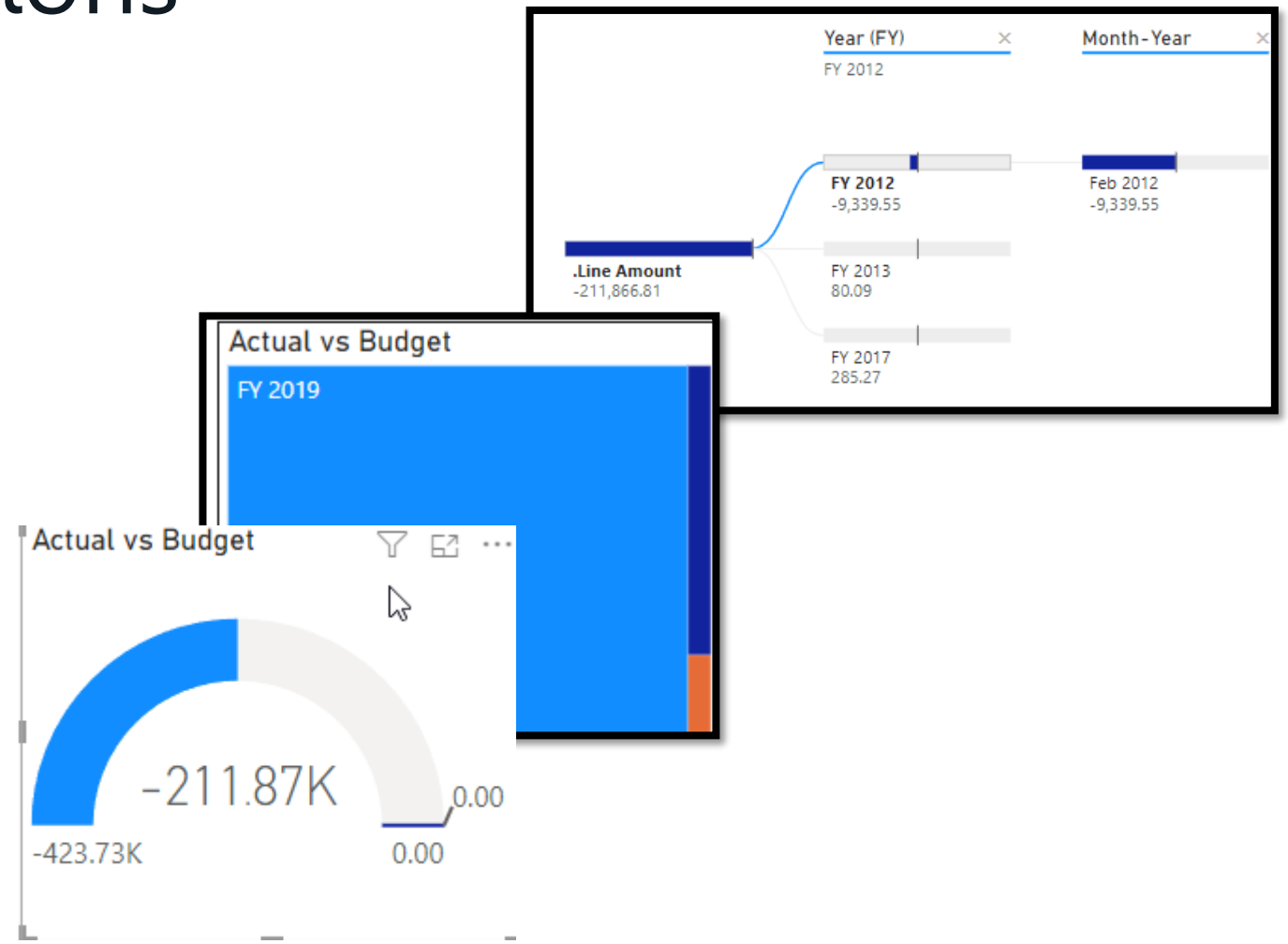




©2023 Woodard Events, LLC – All rights reserved

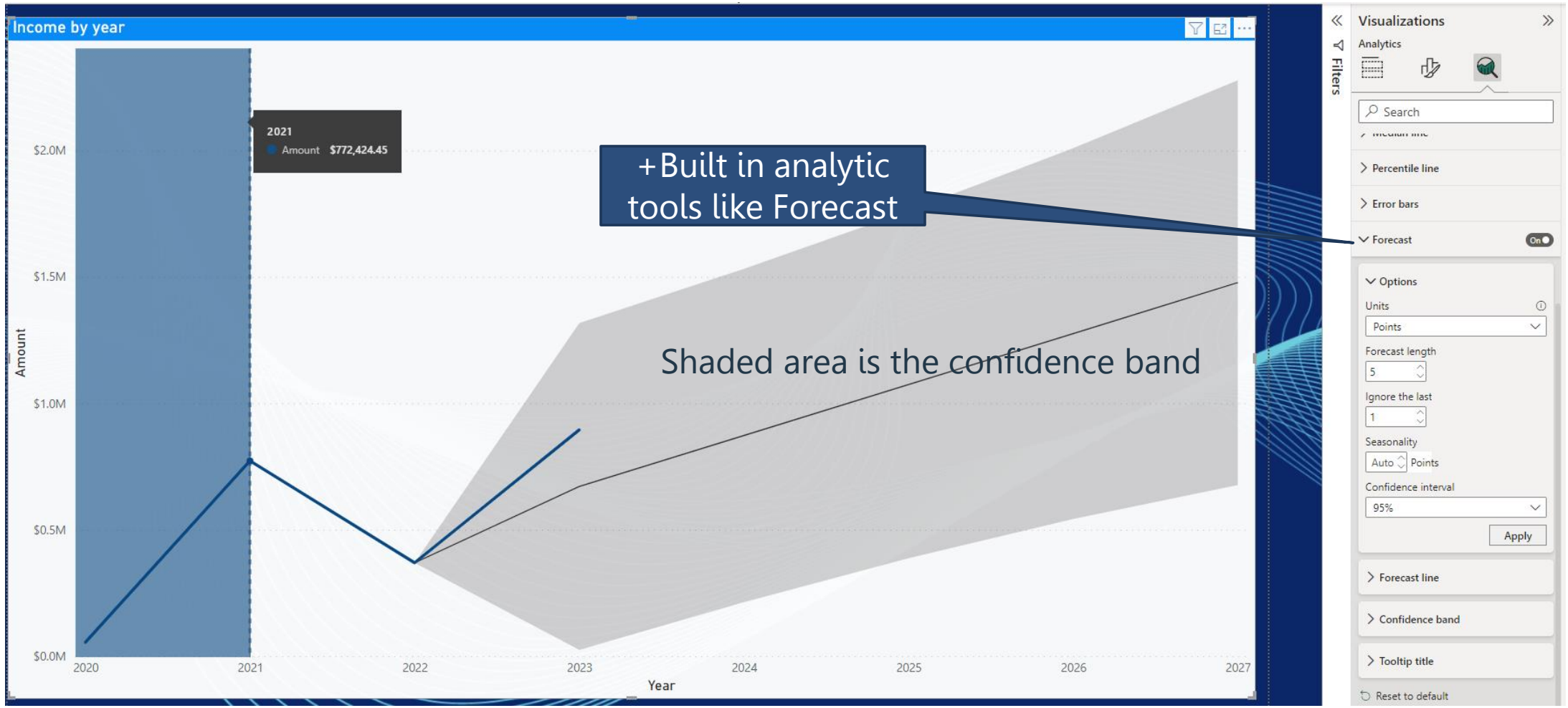
Standard Visualizations

- Decomposition Tree
- Treemap
- Gauge



©2023 Woodard Events, LLC – All rights reserved

The “simple” line chart



©2023 Woodard Events, LLC – All rights reserved

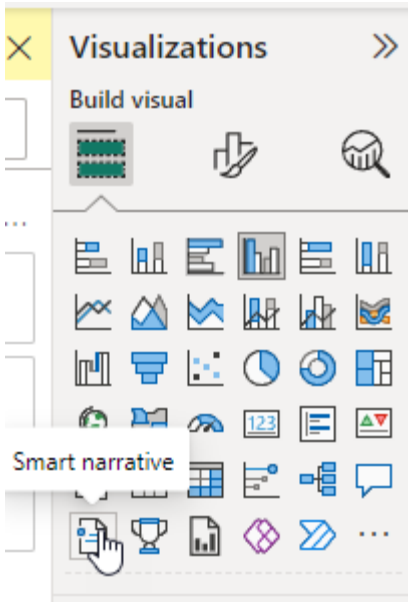
Can AI really write my Financial Summary?

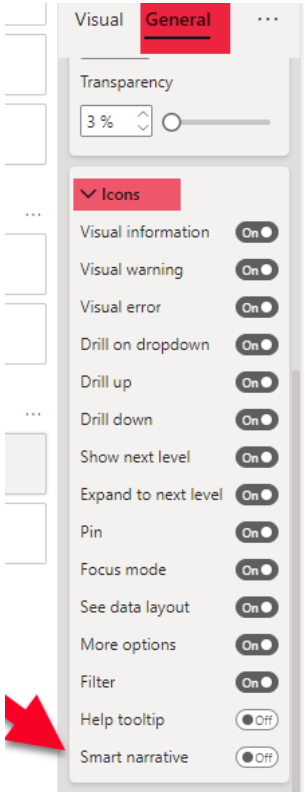
How to use the Smart Narrative tool

Two ways to engage smart narrative:

1. Enable smart narrative on a chart

   General->Header Icons->Icons





2. Add Smart narrative as a Visualization

At $570,486.98, Subcontracted Labor Income had the highest Amount and was 2,277.95% higher than Fountains & Garden Lighting, which had the lowest Amount at $23,990.68.

Subcontracted Labor Income accounted for 27.27% of Amount.

Across all 8 AccountName, Amount ranged from $23,990.68 to $570,486.98.

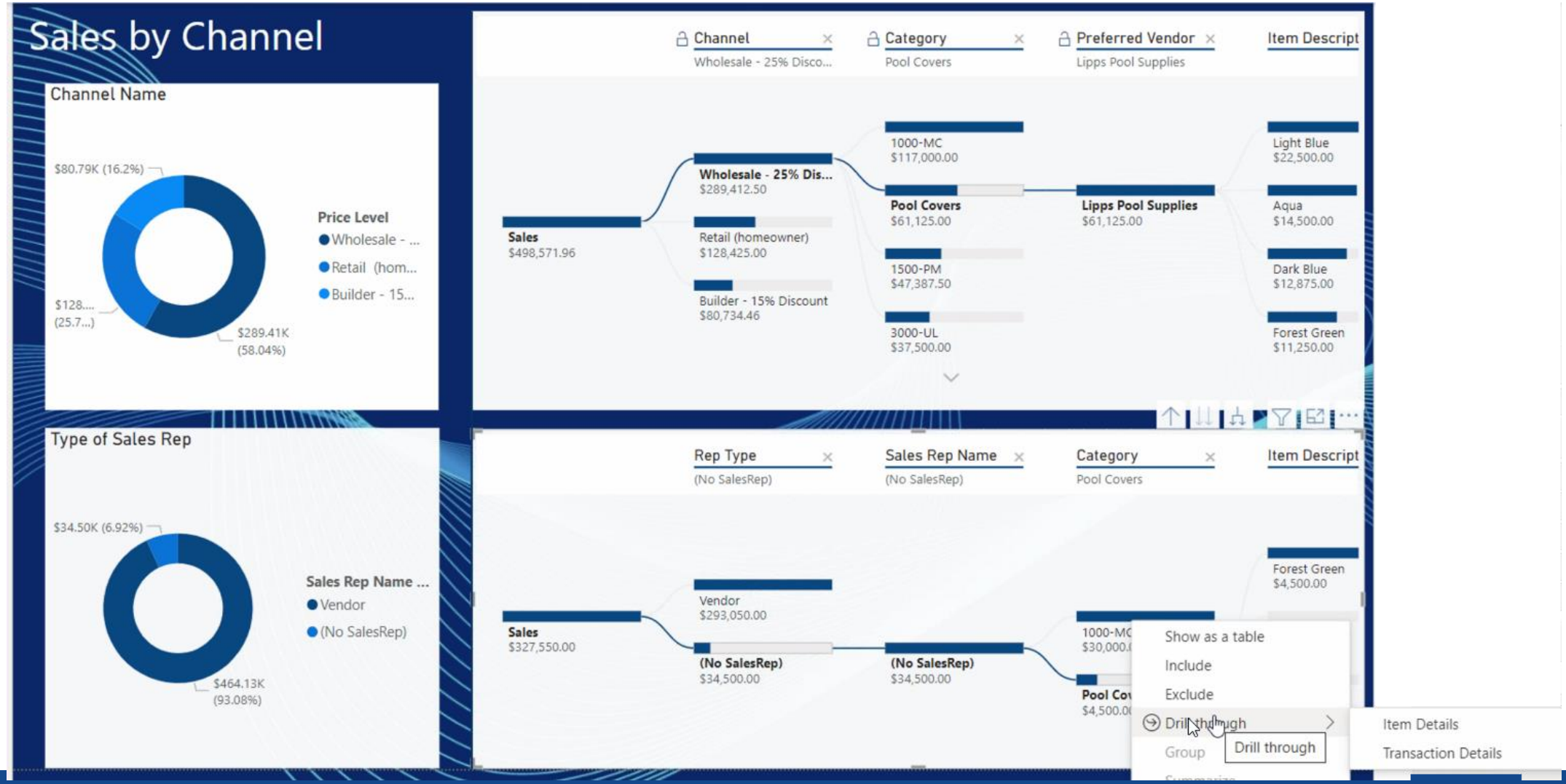
©2023 Woodard Events, LLC – All rights reserved

Demo Time! Let's See it in Action

Scaling New Heights®

©2023 Woodard Events, LLC – All rights reserved

Properly Constructed, you can drill to details

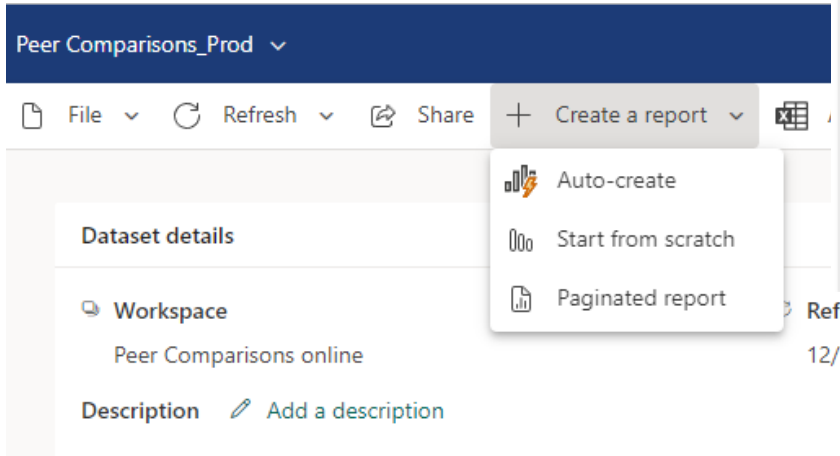


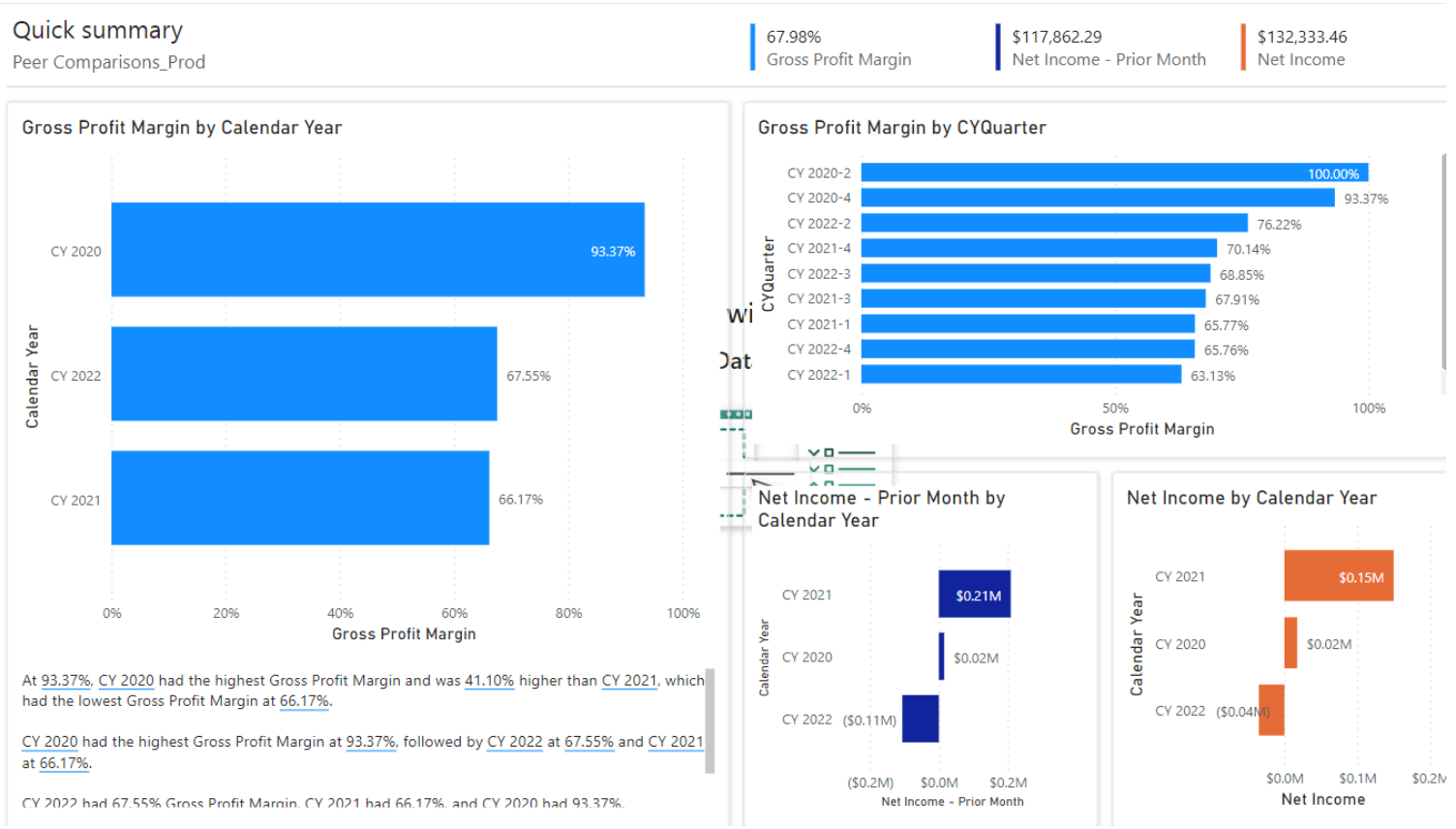
©2023 Woodard Events, LLC – All rights reserved

Auto create a sample report

New Slide

While it's not likely to solve you needs, I would be remise to not show you how you can get the Power BI to auto generate a report..



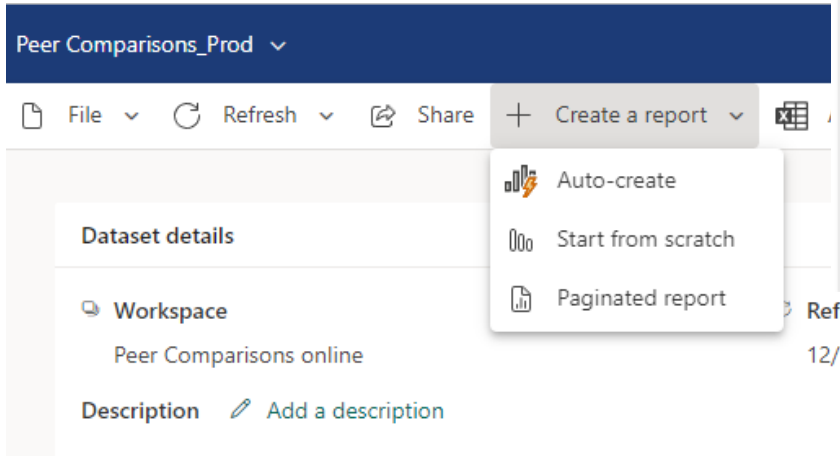


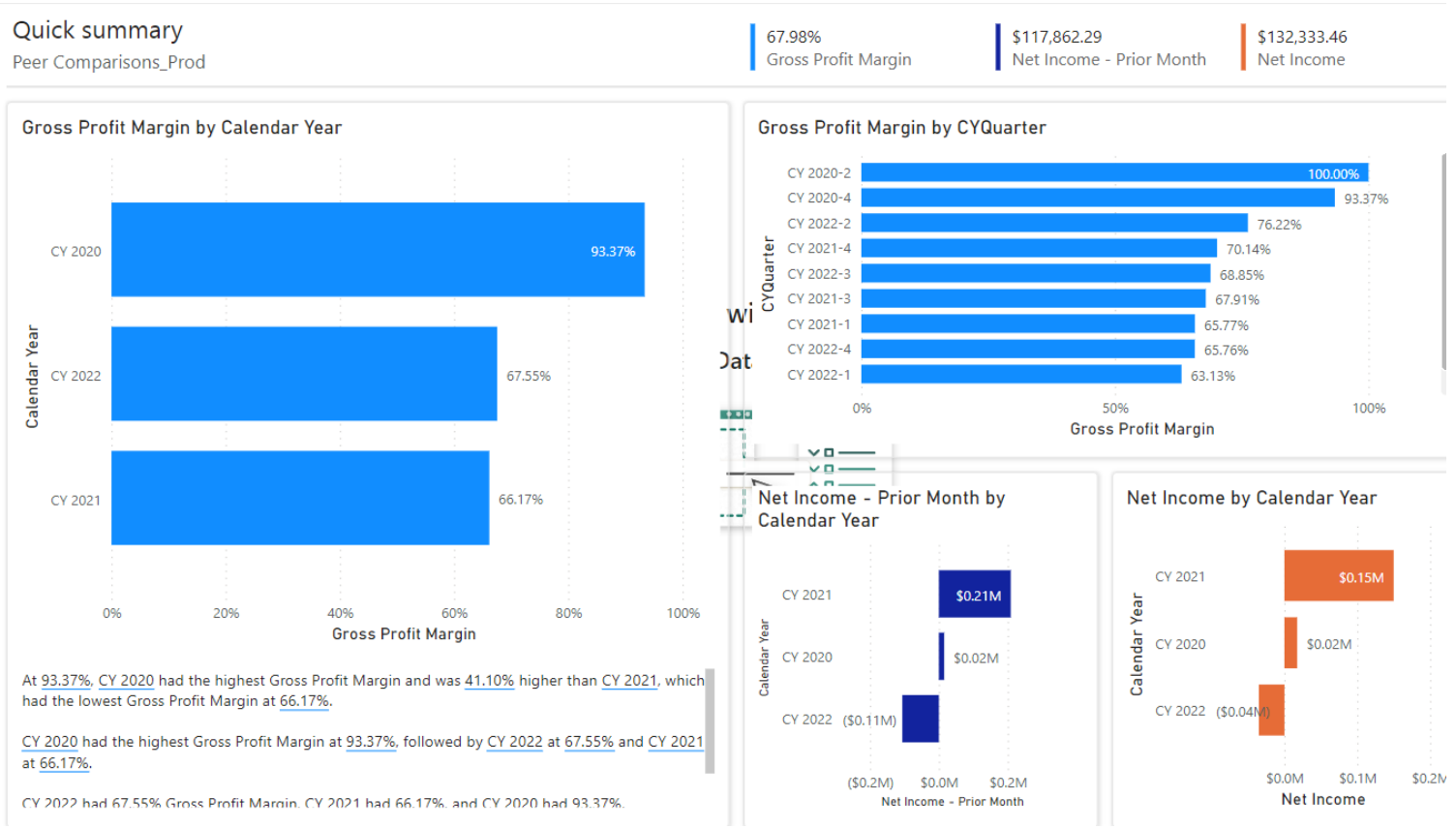
©2023 Woodard Events, LLC – All rights reserved

Auto create a sample report

New Slide

While it's not likely to solve you needs, I would be remise to not show you how you can get the Power BI to auto generate a report..

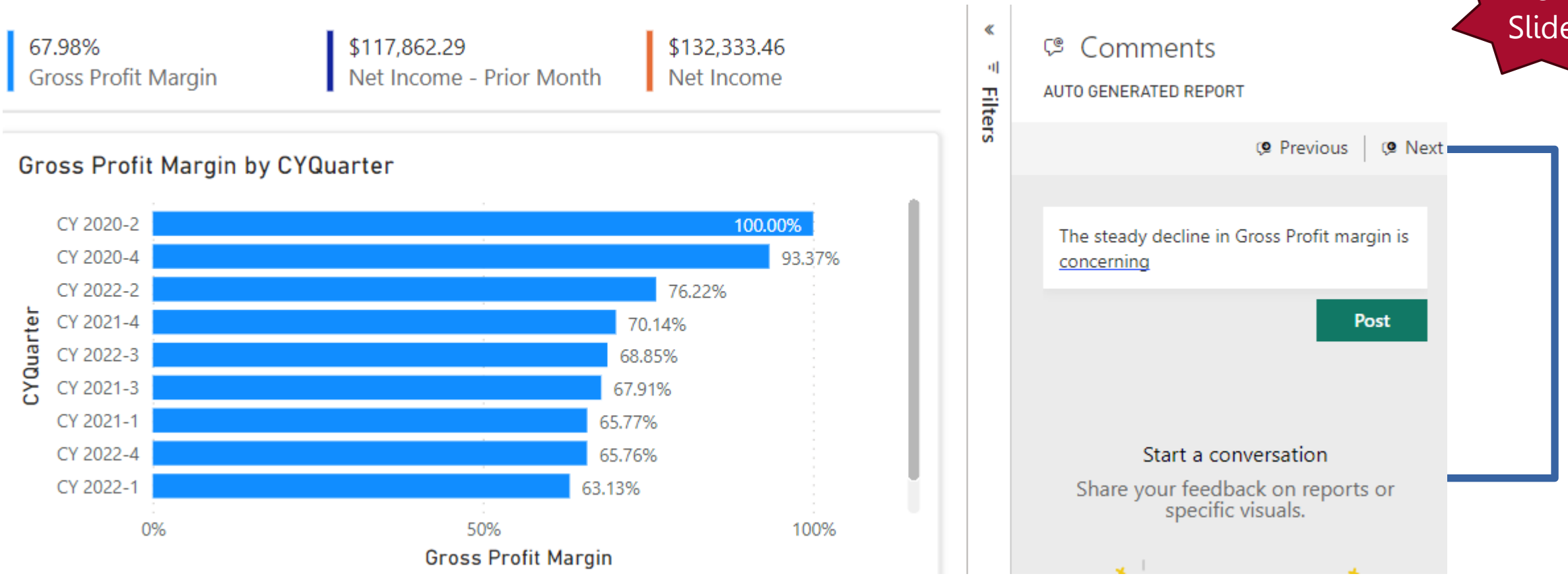




©2023 Woodard Events, LLC – All rights reserved

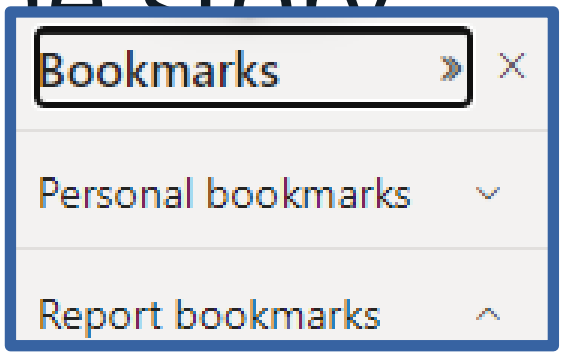
Comments within a report can spur a dialogue

New Slide



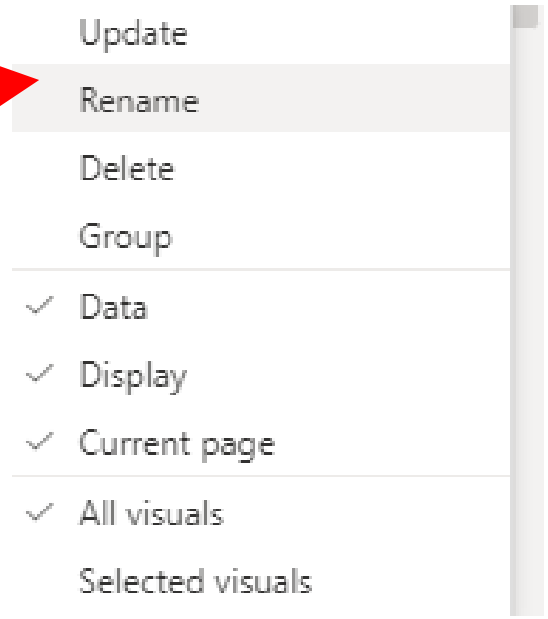
©2023 Woodard Events, LLC – All rights reserved

Bookmarks let you prepare to tell the story



- Bookmarks give you the ability to save an exact view within the report and then get back to it

- Not all report bookmarks are a like



New Slide

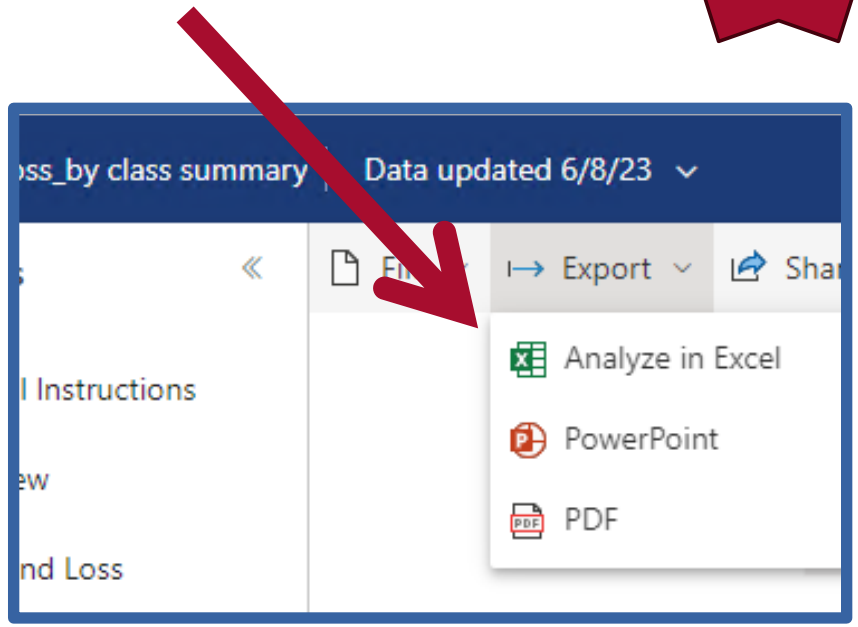
If you are building them try and let the user know what is included

©2023 Woodard Events, LLC – All rights reserved

Analyzing financials in Excel with Power BI

- Uses published data model(s)
- Pivot Table Interface
- Only Measures can be put into values

New Slide

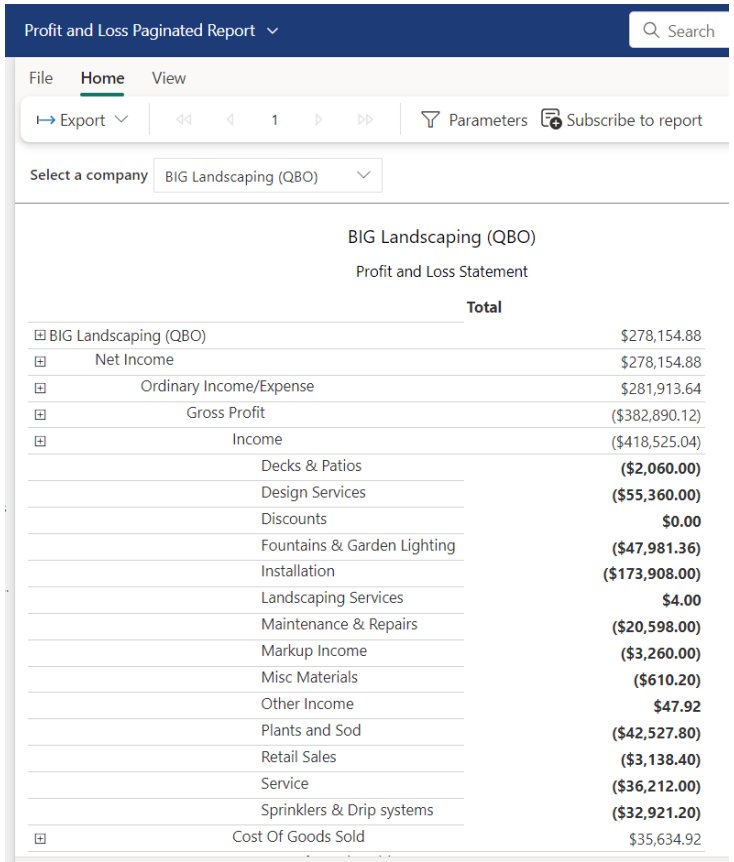


©2023 Woodard Events, LLC – All rights reserved

Getting Financial Statements from Power BI

- Build financials using
  Power BI Report Builder
- Requires Premium per user license to view online

New Slide



BIG Landscaping (QBO)

Profit and Loss Statement

	Total
BIG Landscaping (QBO)	$278,154.88
Net Income	$278,154.88
Ordinary Income/Expense	$281,913.64
Gross Profit	($382,890.12)
Income	($418,525.04)
Decks & Patios	**($2,060.00)**
Design Services	**($55,360.00)**
Discounts	**$0.00**
Fountains & Garden Lighting	**($47,981.36)**
Installation	**($173,908.00)**
Landscaping Services	**$4.00**
Maintenance & Repairs	**($20,598.00)**
Markup Income	**($3,260.00)**
Misc Materials	**($610.20)**
Other Income	**$47.92**
Plants and Sod	**($42,527.80)**
Retail Sales	**($3,138.40)**
Service	**($36,212.00)**
Sprinklers & Drip systems	**($32,921.20)**
Cost Of Goods Sold	$35,634.92

https://learn.microsoft.com/en-us/power-bi/learning-catalog/paginated-reports-online-course#self-study-kit

©2023 Woodard Events, LLC – All rights reserved

Review and Questions

Scaling New Heights®

©2023 Woodard Events, LLC – All rights reserved

Resources

Complete list of connectors is available at:

https://docs.microsoft.com/en-us/power-bi/power-bi-data-sources

Visuals categorized at:

https://www.sqlbi.com/ref/power-bi-visuals-reference/

Book list at:

https://www.betterideagroup.com/bookshelf.html

©2023 Woodard Events, LLC – All rights reserved

SOAR

Ernest Cook
Better Idea Group

Ernest@BetterIdeaGroup.com

Scaling New Heights®

©2023 Woodard Events, LLC – All rights reserved

Using Power BI to Change How You Deliver the Financial Story

©2023 Woodard Events, LLC – All rights reserved

#SNH23

Scaling New Heights