

# Power BI One Day Course



Power BI is a cloud based data analytics tool

Level: Basic and Intermediate

Target Audience: Anyone who has an interest in creating incisive reports using Power BI

Last Updated: 30/08/2023

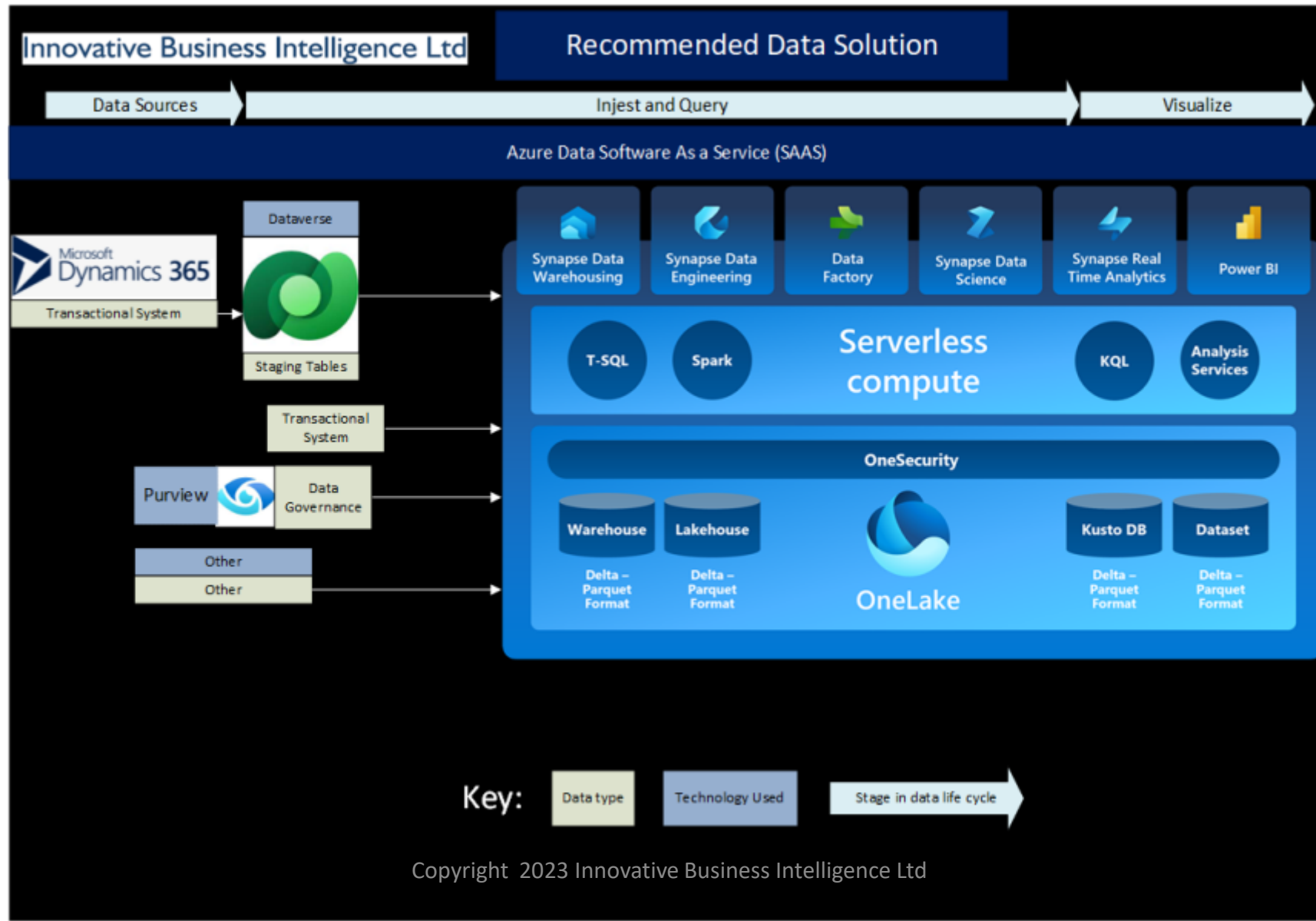
# About the Speaker: Kieran Wood

- Consultant, Developer, Architect, Trainer and Publisher @ Innovative Business Intelligence Ltd
- 25 Years experience in Data Management and Analytics
- Power BI Author, trainer and public speaker
- 22K+ followers on LinkedIn
- Passed 18+ Microsoft Data focused exams

# Introduction

- This is a two day Power BI course condensed into one day which is based on the following book <https://www.amazon.com/Data-Analytics-All-Power-Commercial-ebook/dp/B0821V8R15>
- So this course will consist of exploring and amending the book solution to meet the agreed course objectives ...  
<https://community.fabric.microsoft.com/t5/Data-Stories-Gallery/Power-BI-Best-Practice-Recommendation/mp/745072#M2786>

# Microsoft Fabric



# Get the Solution Running within Power BI

The screenshot displays the Power BI Desktop application window. The title bar reads "AdventureWorksDataStory - Power BI Desktop" and the user is "Kieran Wood". The ribbon includes tabs for File, Home, Insert, Modeling, View, Optimize, Help, and External tools. The Home tab is active, showing various tool groups like Clipboard, Data, Queries, Visuals, Calculations, Sensitivity, and Share.

The main report area shows a dark-themed dashboard for "Adventure Works cycles". It includes an "Overview" section with the objective: "The objective of this Adventure Works solution is to measure, analyse and track the status of sales within this fictitious cycle company." Below this is a "Report" section with a table of key questions and filters.

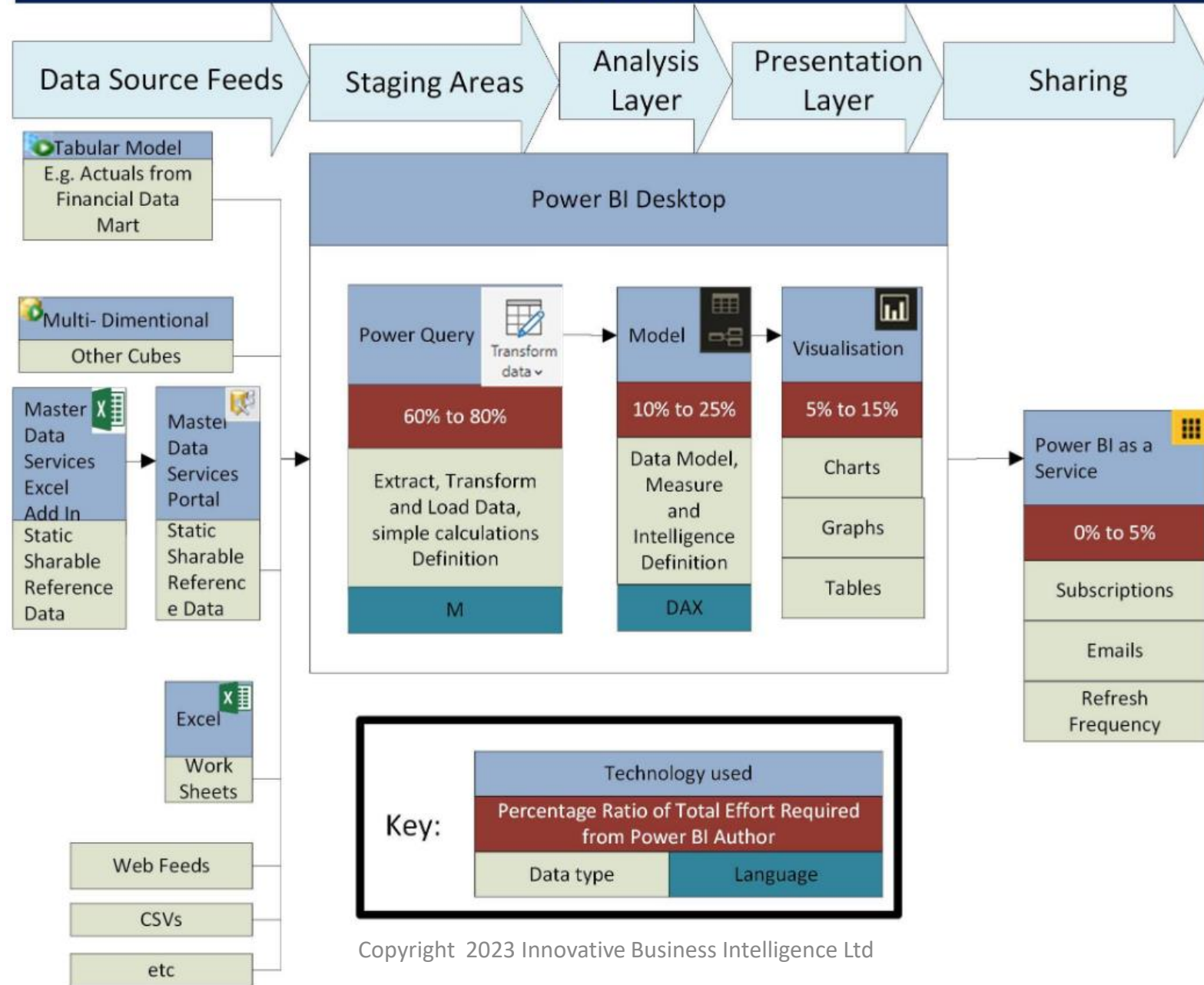
Report	Key Questions	View / Filter By
Customers	Total Sales, Gross Margin, Total Order Quantity, Total Tax, % Growth to Last Year, Sales by Territory Group, Sales using hierarchy of Product Category, Sub category and Name, Top 10 Customers By Sales.	Hierarchy of Product Category / Sub Category / Product Name Country, State, City and Sales Due Date.
Products	Sales by Top 10 Products, Sales by Country, Sales drilling down to Year, Month and Day Sales using hierarchy of Product Category, Sub category and Name. Cumulative Sales By Date over Year.	Country, State, Model, Product Name and Sales Due Date.
Location	Sales By Country / State / City, Cost verses Sales Against different Countries.	Hierarchy of Product Category / Sub Category / Product Name Country, State, City and Sales Due Date.
What If	The Sales Discount impact on Sales Amount impact. Cost Adjustment impact on Cost. Gross Margin impact by both the above.	Sales Discount %, Cost Adjustment %, Product Hierarchy, Country and Date Period.
Time Intelligence	Sales Last, Total Sales, Month To Date Sales, Quarter to Date Sales, Year to Date Sales, % Growth to Last Year.	Geography Hierarchy, Model, Product Name and Calendar Year
Further Analytics	Monthly Increase / Decrease in Sales	Hierarchy of Product Category / Sub Category / Product Name, Commute Distance, Occupation, Due Date.

At the bottom of the report area, there are buttons for "Data", "Measures Defined", and "Information". A status bar at the bottom right indicates "Latency (Data Source Last Update): 15/11/2019".

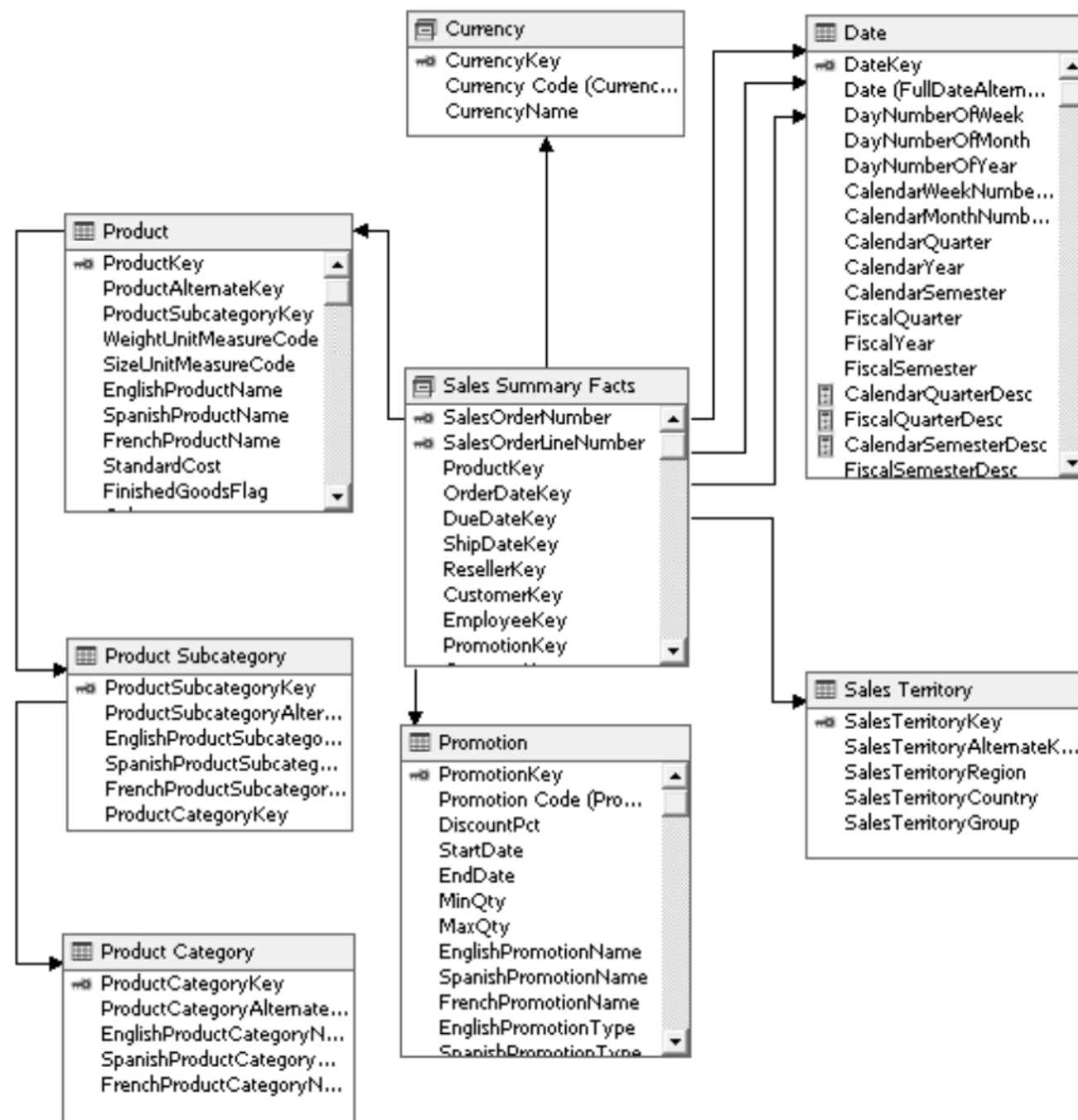
The right-hand pane shows the "Visualizations" and "Data" sections. The "Visualizations" section includes a "Build visual" button and a list of visualization types. The "Data" section includes a search bar and a list of data fields: Sales, Cost Adjustment, Customer, Date, Product, and Sales Discount %.

The bottom navigation bar includes a "Menu" button and a list of report sections: Customer, Product, Location, What If, Time Intelligence, Further Analytics, Data, Measures Defined, and Information.

# Power BI Architecture for Power BI Authors next steps Best Practice

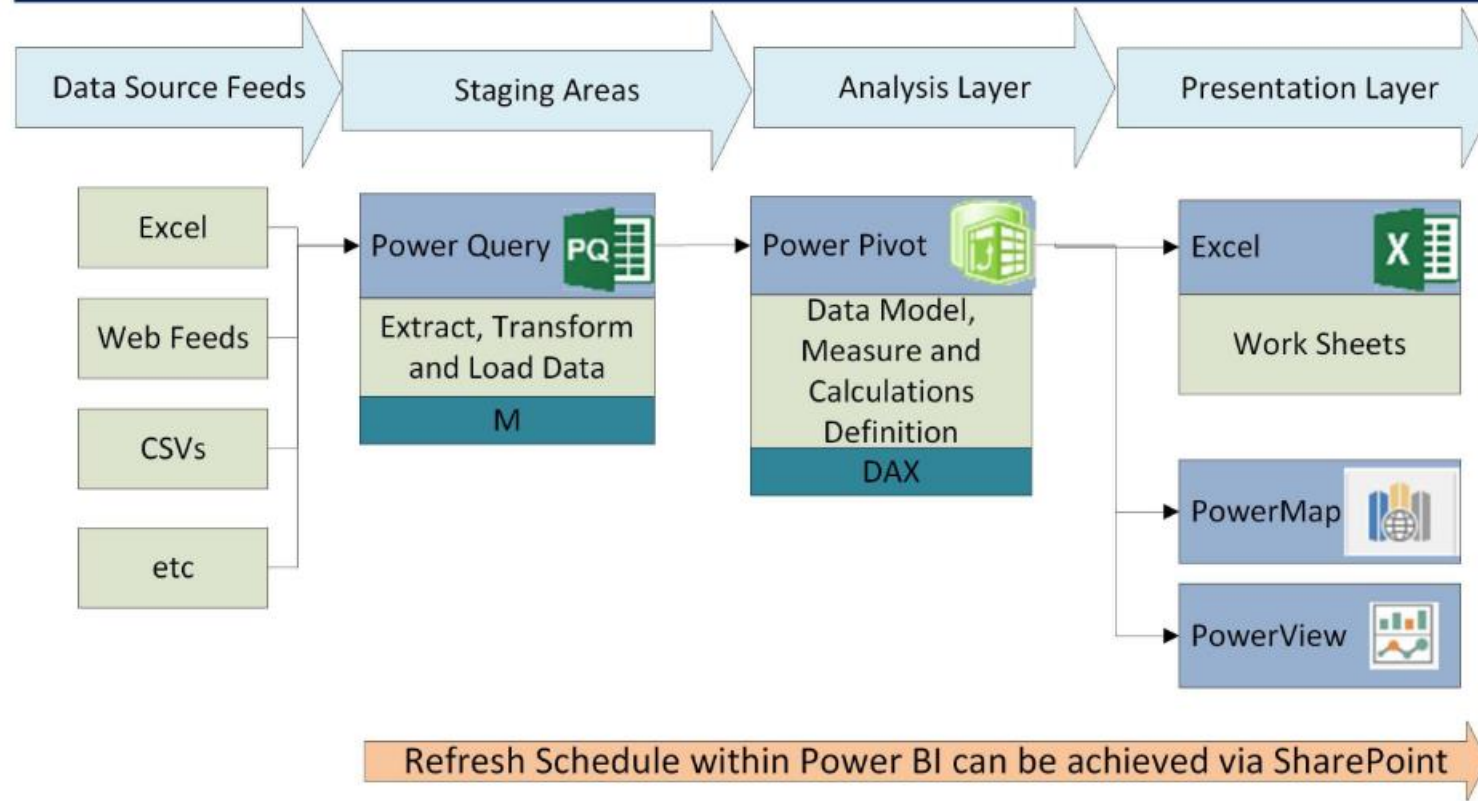


## Data Model High Level Physical Example





## Logical Architecture of Power Business Intelligence System Data Life Cycle using Excel 2016



Key:

Data type

Technology used

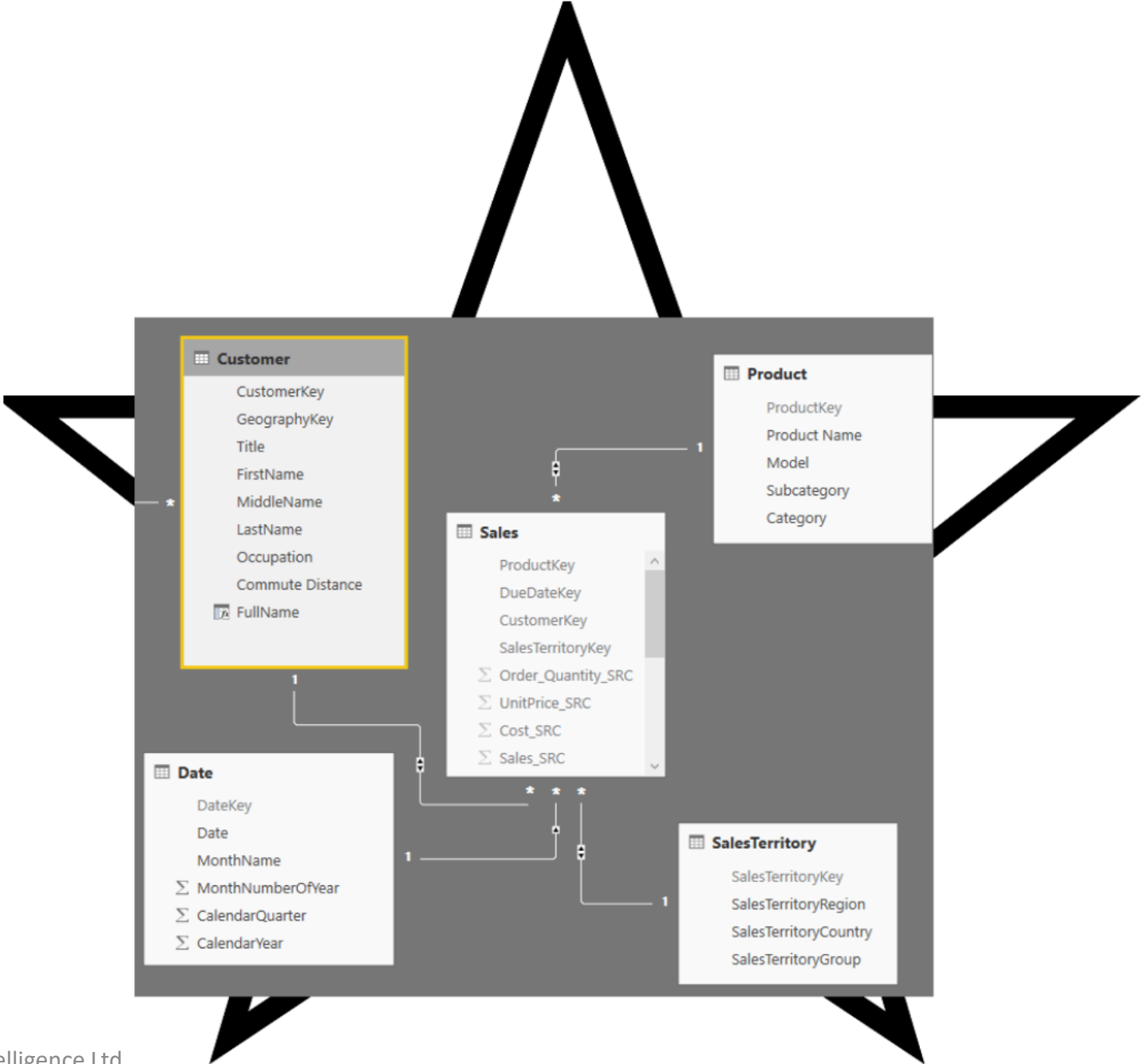
Language

Stage in data life cycle

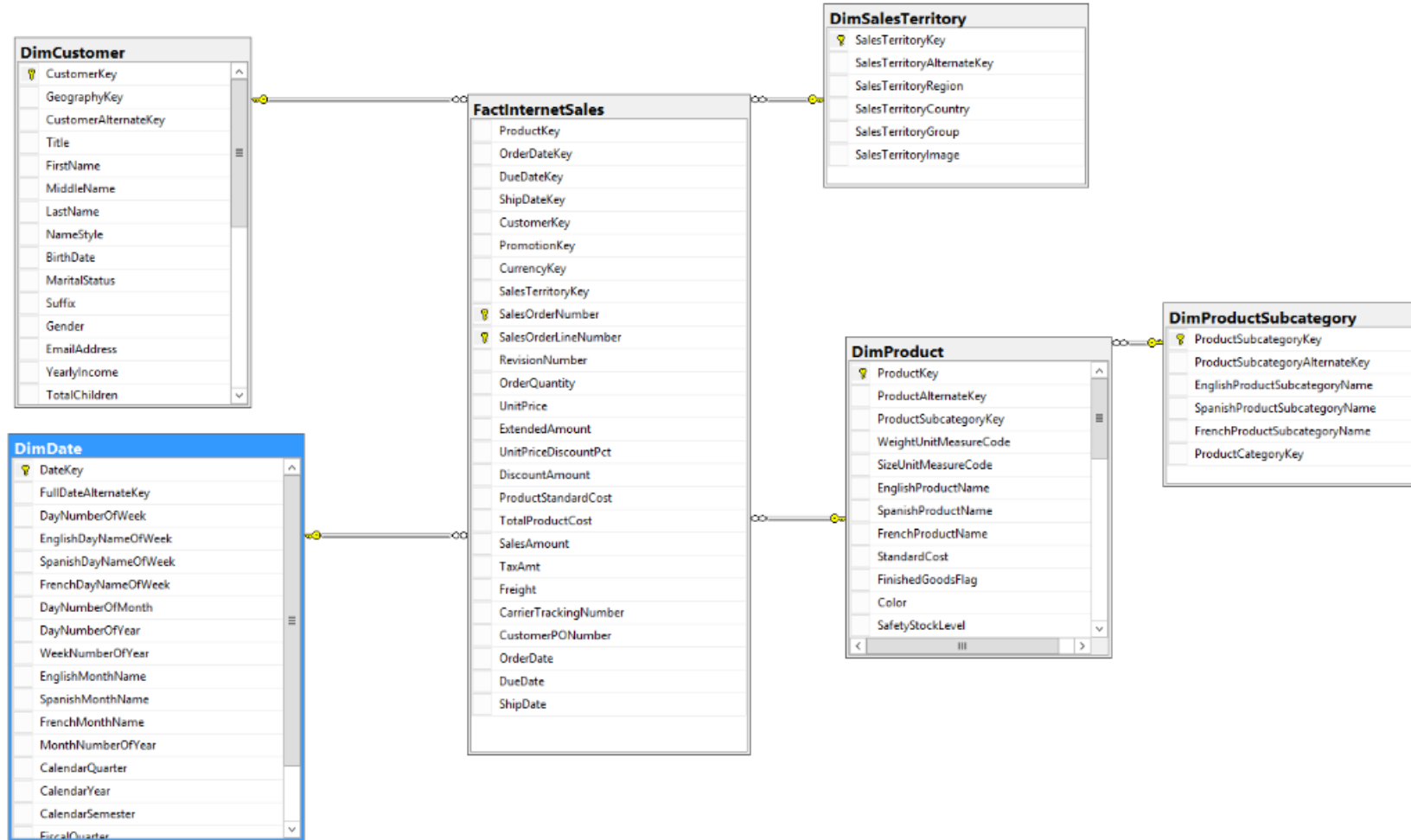
Description of schedule




Star Schema



# Snowflake Schema



# Navigate the Sample Solution



**Overview**  
The objective of this Adventure Works solution is to measure, analyse and track the status of sales within this fictitious cycle company.

**Report**

Customers

Products

Location

What If

Time Intelligence

Further Analytics

Data Page

**Key Questions**

Total Sales, Gross Margin, Total Order Quantity, Total Cost, Total Tax, % Growth to Last Year, Sales by Territory Group, Sales using hierarchy of Product Category, Sub category and Name, Top 10 Customers By Sales.

Sales by Top 10 Products, Sales by Country, Sales drilling down to Year, Month and Day Sales using hierarchy of Product Category, Sub category and Name. Cumulative Sales By Date over Year.

Sales By Country / State / City, Cost verses Sales Against different Countries.

The Sales Discount impact on Sales Amount impact. Cost Adjustment impact on Cost. Gross Margin impact by both the above.

Sales Last, Total Sales, Month To Date Sales, Quarter to Date Sales, Year to Date Sales, % Growth to Last Year.

Monthly Increase / Decrease in Sales

**View / Filter By**

Hierarchy of Product Category / Sub Category / Product Name Country, State, City and Sales Due Date.

Country, State, Model, Product Name and Sales Due Date.

Hierarchy of Product Category / Sub Category / Product Name Country, State, City and Sales Due Date.

Sales Discount %, Cost Adjustment %, Product Hierarchy, Country and Date Period.

Geography Hierarchy, Model, Product Name and Calendar Year

Hierarchy of Product Category / Sub Category / Product Name, Commute Distance, Occupation, Due Date.

Measures Defined

Information

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Latency (Data Source Last Update): 15/11/2019

96%

# Power Query for Extract, Transform and Load

AdventureWorksDataStory - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply New Source Recent Sources Enter Data Data source settings Manage Parameters Refresh Preview Properties Advanced Editor Choose Columns Remove Columns Keep Rows Remove Rows Sort Split Column Group By Data Type: Whole Number Merge Queries Append Queries Text Analytics Vision Azure Machine Learning Combine Files AI Insights

Queries [13] This preview may be up to 161 days old. Refresh

123 ProductKey 123 DueDateKey 123 CustomerKey 123 SalesTerritoryKey 123 Order\_Quantity\_SRC 1.2 UnitPrice\_SRC 1.2 Cost\_SRC 1.2 Sal

Valid 100% Valid 100% Valid 100% Valid 100% Valid 100% Valid 100% Valid 100% Valid 100%  
Error 0% Error 0% Error 0% Error 0% Error 0% Error 0% Error 0% Error 0%  
Empty 0% Empty 0% Empty 0% Empty 0% Empty 0% Empty 0% Empty 0%

25 distinct, 0 unique 180 distinct, 4 unique 1000 distinct, 1000 unique 7 distinct, 0 unique 1 distinct, 0 unique 4 distinct, 0 unique 4 distinct, 0 unique 4 distinct, 0 unique

1	310	20161030	21768	6	1	3578.27	2171.2942
2	346	20161030	28389	7	1	3399.99	1912.1544
3	346	20161030	25863	1	1	3399.99	1912.1544
4	336	20161030	14501	4	1	699.0982	413.1463
5	346	20161030	11003	9	1	3399.99	1912.1544
6	311	20161031	27645	4	1	3578.27	2171.2942
7	310	20161031	16624	9	1	3578.27	2171.2942
8	351	20161031	11005	9	1	3374.99	1898.0944
9	344	20161031	11011	9	1	3399.99	1912.1544
10	312	20161101	27621	4	1	3578.27	2171.2942
11	312	20161101	27616	4	1	3578.27	2171.2942
12	330	20161101	20042	10	1	699.0982	413.1463
13	313	20161101	16351	9	1	3578.27	2171.2942
14	314	20161101	16517	9	1	3578.27	2171.2942
15	314	20161102	27606	1	1	3578.27	2171.2942
16	311	20161102	13513	8	1	3578.27	2171.2942
17	310	20161103	27601	4	1	3578.27	2171.2942
18	311	20161103	13591	10	1	3578.27	2171.2942
19	314	20161103	16483	9	1	3578.27	2171.2942
20	311	20161103	16529	9	1	3578.27	2171.2942
21	336	20161103	25249	9	1	699.0982	413.1463
22							

9 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows

Query Settings

PROPERTIES

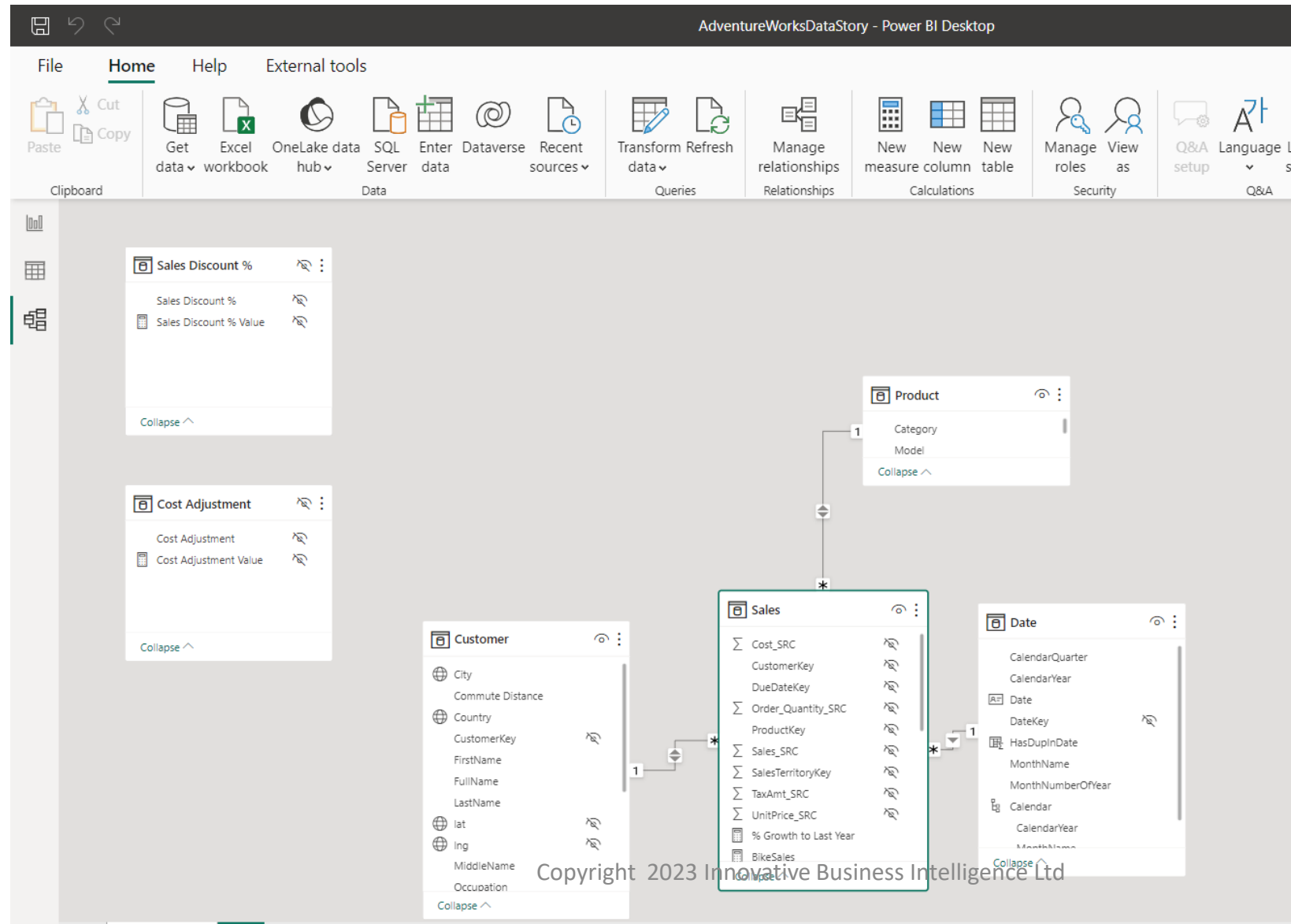
Name  
Sales

APPLIED STEPS

Source  
Navigation  
Changed Type  
Removed Other Columns  
Renamed Columns

PREVIEW DOWNLOADED ON 21 MARCH 2023

# Data Model



# Measures

```
Cumulative Sales =  
CALCULATE ([Total Sales],  
FILTER ( ALL ( 'Date'[Date] ), 'Date'[Date] <= MAX ( 'Date'[Date] ) ) )
```

```
Diff. Sales and Sales Last Year = [Total Sales] - [Sales Last Year]
```

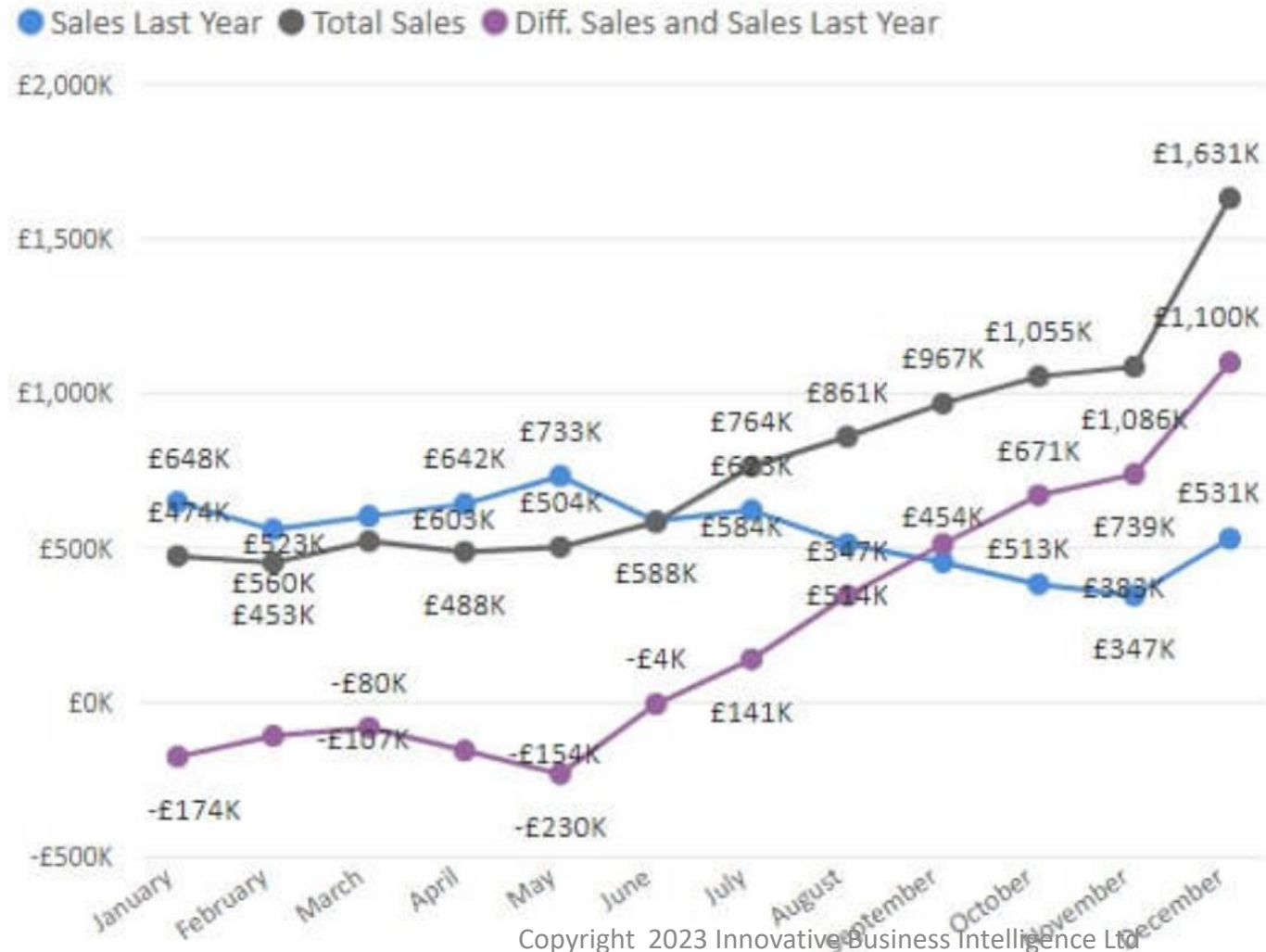
```
Sales MTD = TOTALMTD([Total Sales], 'Date'[Date])
```

```
Sales QTD = TOTALQTD([Total Sales], 'Date'[Date])
```

```
Sales YTD = TOTALYTD([Total Sales], 'Date'[Date])
```

# Data Visualisations

Sales Last Year Verses Current Year

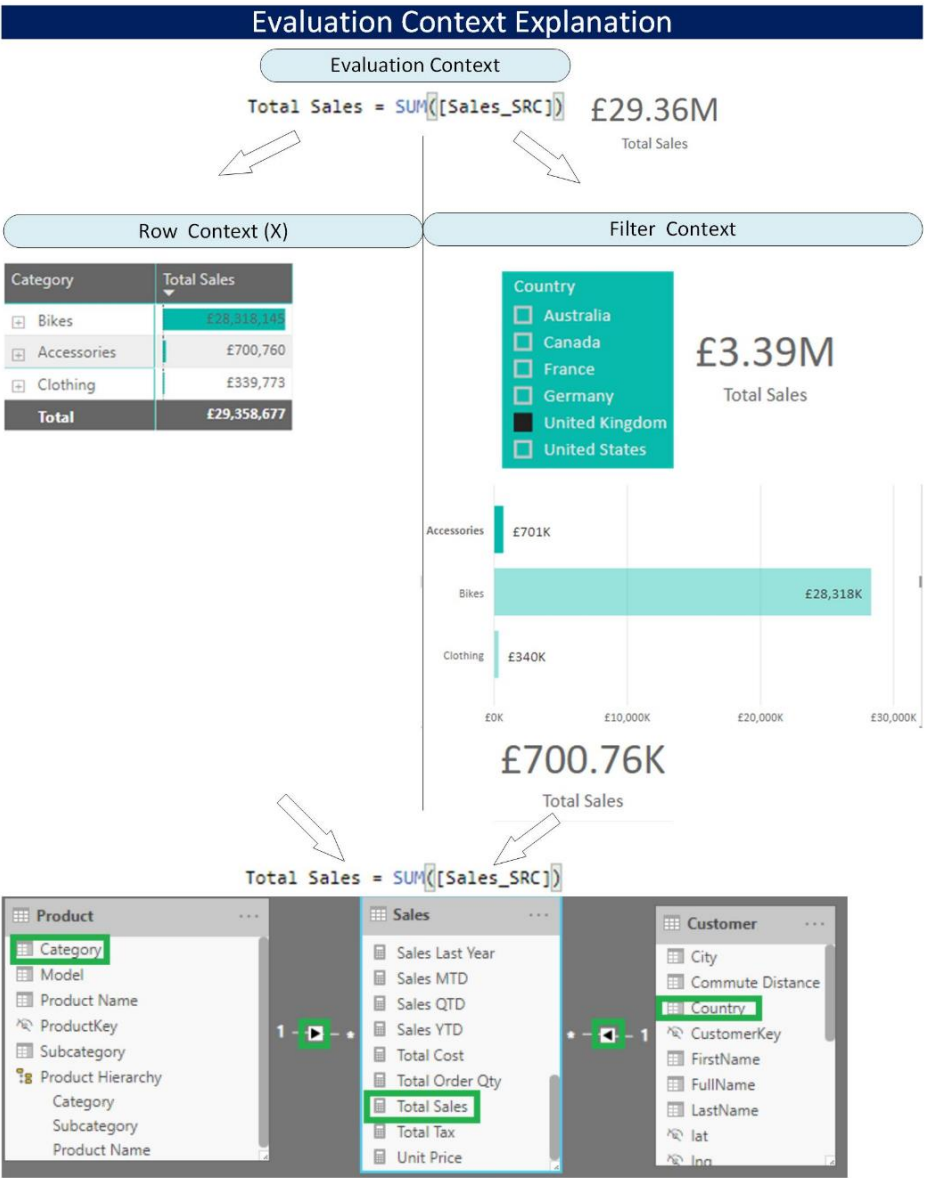




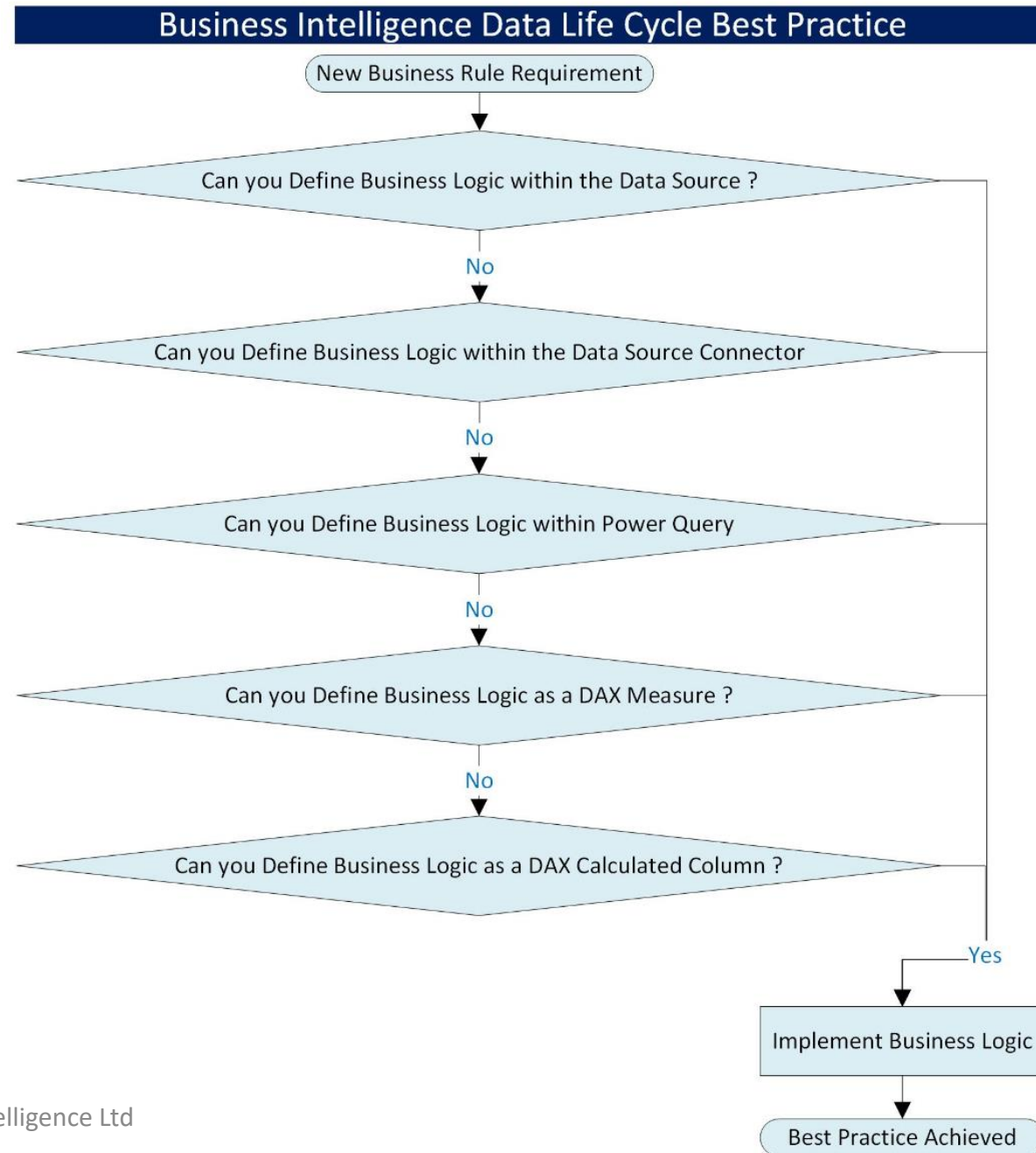
# Evaluation Context

Context is Everything! The Evaluation Context within DAX is made up of Row Context and Filter Context.

Essentially to deliver commercial quality Power BI solutions you need a basic knowledge of DAX. To have a basic knowledge of DAX requires that you are able to appreciate how the evaluation context can result in the same DAX formula presenting many different values.

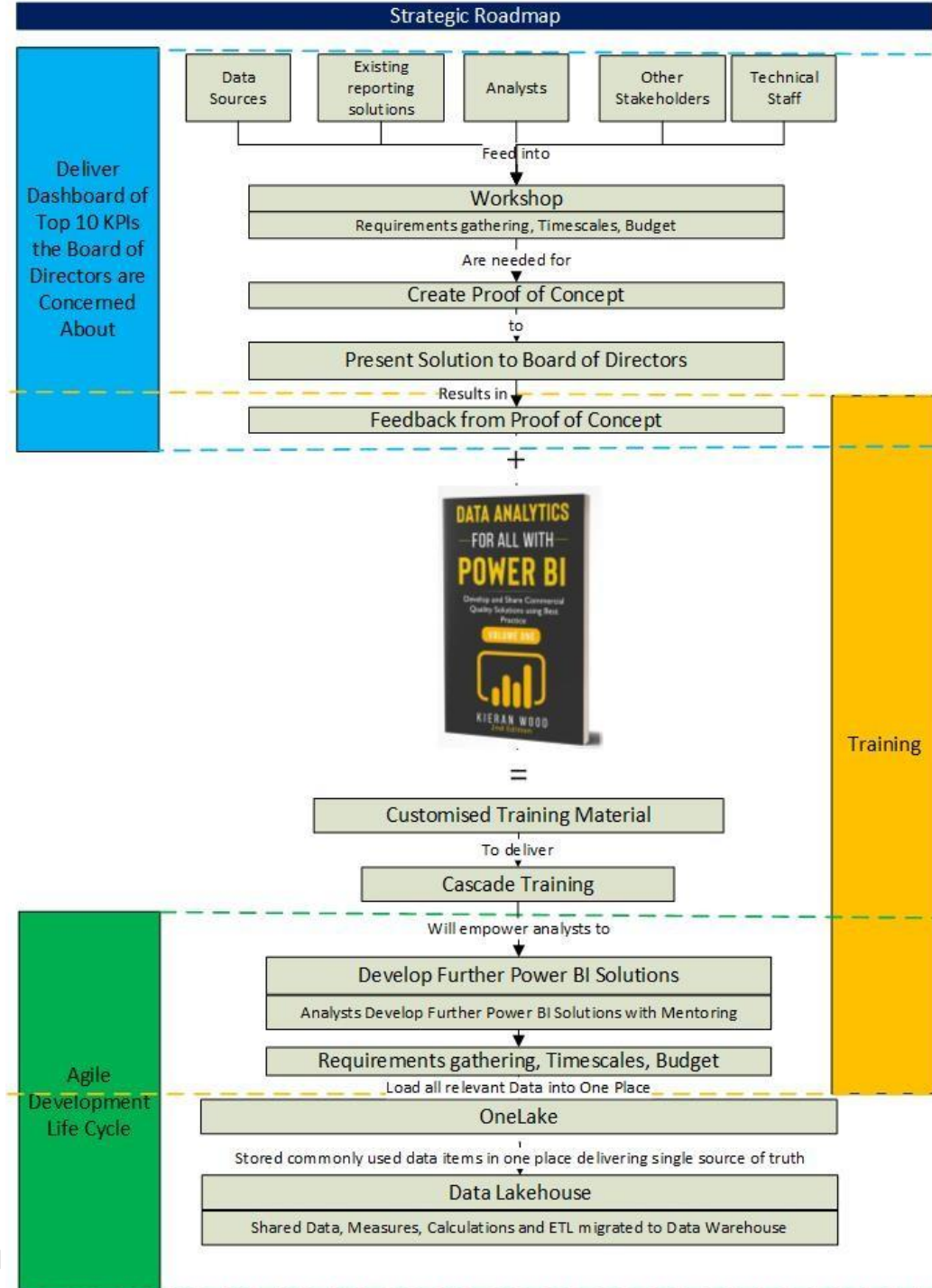


## Diagram Summarising Data Life Cycle Best Practice

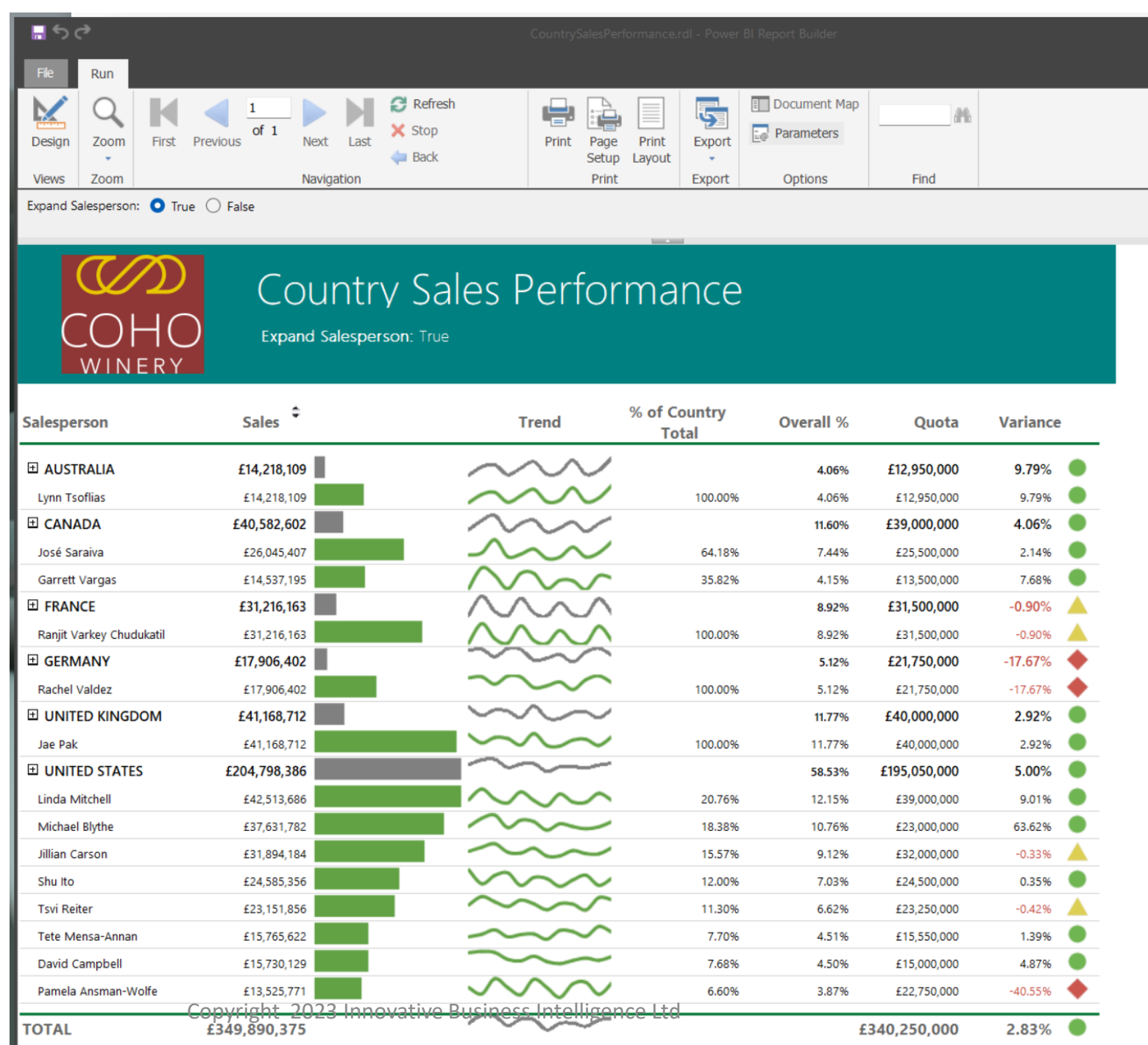


# Power BI Service





# Paginated Reports



# Next Steps

- Thank you
- Please connect to me on LinkedIn ... [Kieran's LinkedIn Profile](#) . If you found my training useful please provide a LinkedIn recommendation.
- [Further Power BI Course Material](#)
- [Reusable DAX Patterns based on your Power BI Star Schema Model](#)
- <https://www.sqlbi.com/>
- [DAX Reference](#)
- [DAX Guide](#)
- [DAX Studio Download](#)
- [www.sqlbi.com](http://www.sqlbi.com)
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