



Power BI - Introduction

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Housekeeping

- Student check
- Parking
- Installation and environment setup
 - Download install PBI desktop client
 - Connect to github repo
 - <https://github.com/gpsuser/PBI>
 - Get data files
 - <https://github.com/microsoft/powerbi-desktop-samples/blob/main/DAX/Adventure%20Works%20DW%202020.pbix>
- 10 min break on the hour (time permitting)
- Coffee/Tea
- Hands on course
- Share - if don't have terminal



Agenda

- Introduction
 - What is PBI
- Getting Started
 - Importing data from various sources
 - Introduction to the Power Query Editor
- Creating Basic Visualisations
 - Bar charts, line charts, and pie charts
 - Tables and matrices
- Introduction to Dax
 - Creating simple calculated columns
 - Basic measures
- Next Steps



Introduction

- What is Power BI:
 - Power BI is a suite of business analytics tools by Microsoft.
 - It helps you connect, prepare, model, visualize, and share data from various sources.



Introduction

- Key Features:
 - **Data Connectivity:** Connects to a wide range of data sources, including Excel, databases, and cloud services
 - **Data Transformation:** Clean and transform data with Power QueryIt helps you connect, prepare, model, visualize, and share data from various sources.
 - **Data Modeling:** Create relationships between data sets and build complex models.
 - **Visualizations:** Create interactive reports and dashboards with a variety of visual tools.
 - **Sharing and Collaboration:** Share insights with your team through Power BI Service and mobile apps.



Introduction

- **Benefits:**
 - **User-Friendly:** Intuitive interface suitable for both beginners and advanced users.
 - **Real-Time Insights:** Access and analyze data in real-time.
 - **Scalability:** Suitable for small businesses to large enterprises.
 - **Integration:** Seamlessly integrates with other Microsoft products like Excel and Azure.

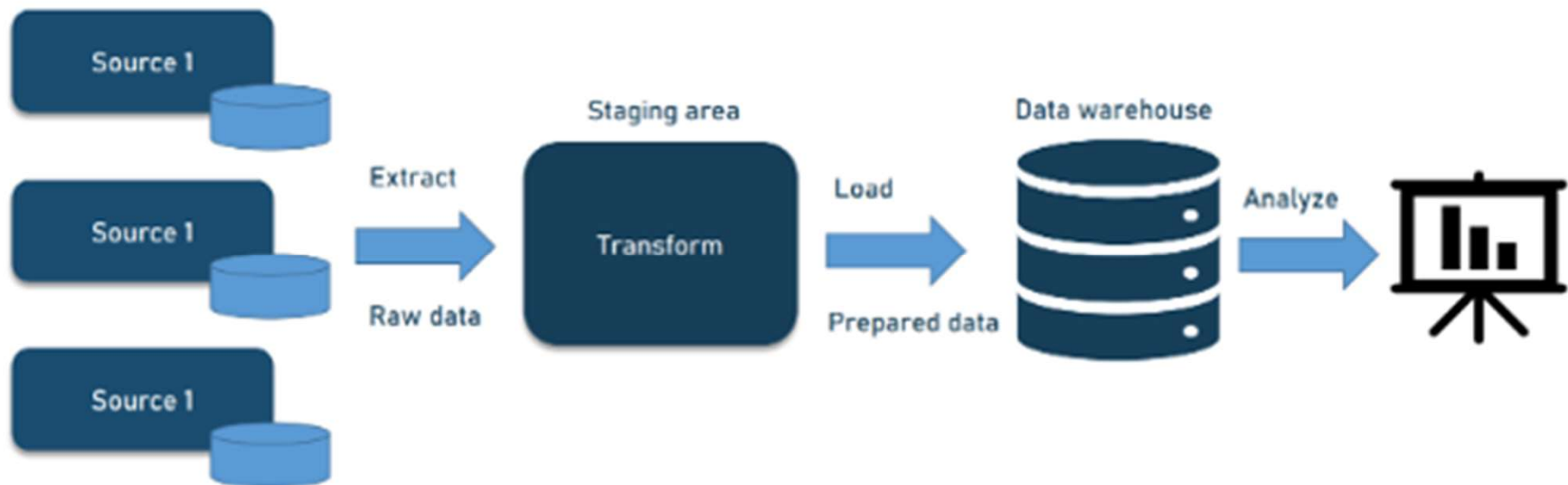


Introduction

- What does success with PBI look like?
 - Insights from data, analytics and related visualisation tooling - are only as good as :
 - the underlying data (data strategy)
 - the supporting data and analytics architecture(s) / data pipelines.
- Ongoing support and commitment from stakeholders is essential

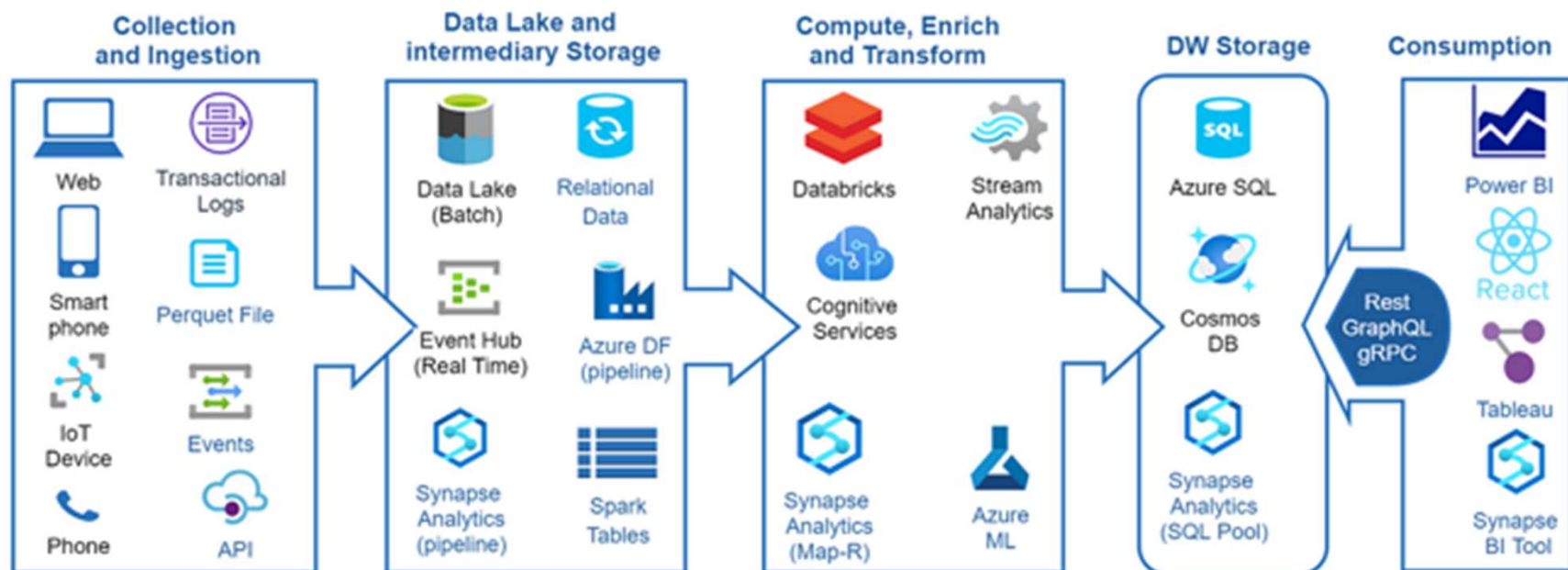
Introduction

- On premise Extract Transform Load (ETL) architecture



Introduction

- Cloud based Extract Load Transform (ELT) architecture





Getting Started

- Download data
- Open Power BI
- Import data
- Manually create table
- Build first data model
- Test the data model relationship(s)
- Build first visual(s)
- Introduction to DAX
- Introduction to using AI copilot and DAX
- Build first Aggregation
- Build first Calculated Table

Download Data

- <https://github.com/gpsuser/PBI>
- > data
- > Raw Data.zip
- > Raw Data.xlsx



Import/Get Data

- Open Power BI
- > Blank Report > Home
- > Get Data
- > Excel Workbook
- > Downloads/ Raw Data/Raw Data.xlsx
- > Select Raw Data sheet
- > Transform Data
- > select DateTime Column
 - > Data Type > Date/Time > Replace Current
- > select Data Date Column
 - > Data Type > Date > Replace Current
- > Close and Apply

Manually Create Table

- > Home
- > Enter Data
- Go to git url
- Copy Product Weight Data
- Right click and paste in Create Table window
- Enter table name as “Product Weight”
- > Edit > Use first rows as headers > Close and Apply



Build first data model

- Model View
- Confirm the Raw Data and Product Weight tables are connected
- Many to one
- Primary Key : Raw Data Table : Product
- Primary Key : Product Weight : Product



Test data model relationship

- > Report View
- > Insert Table on canvas
- > Drag drop
 - Data Date (remove hierarchy)
 - Customer
 - City
 - Product
 - Weight
- Go to model View and break link
- > Report View (check impact)
- Rebuild the link > Model view > Product Weight
 - drag and drop Product field onto Raw Data table

Aggregation with Copilot

Commented out
NewTable



```
EVALUATE
// NewTable =
SUMMARIZE(
    'Raw Data',
    'Raw Data'[City],
    'Raw Data'[Product],
    "Total Weight", SUMX(RELATEDTABLE('Product
Weight'), 'Product Weight'[Weight grams])
)
```

I have a table called Raw Data with the following columns:
Data Date, Customer, City, Product.

I also have a Product Weight table with Product and Weight grams columns.

The product Weight and Raw Data tables are joined on their Primary Key Product columns.

Please write a DAX script to create a table that represents a group by City and Product and sum over Weight grams.

Improved DAX aggregation

Commented out
SummarizedTable




	Raw Data[City]	Raw Data[Product]	[Total Weight]
1	City 10	Product A	115
2	City 3	Product C	3000
3	City 1	Product D	410
4	City 7	Product B	220
5	City 2	Product B	220
6	City 7	Product E	525
7	City 4	Product A	115
8	City 10	Product D	410

```
EVALUATE
//SummarizedTable =
SUMMARIZE(
    'Raw Data',
    'Raw Data'[City],
    'Raw Data'[Product],
    "Total Weight Grams", SUM('Product Weight'[Weight grams])
)
```

Improved DAX aggregation – with sorting

Commented out
SummarizedTable



	Raw Data[City]	Raw Data[Product]	[Total Weight Grams]
1	City 9	Product E	525
2	City 9	Product B	220
3	City 9	Product A	115
4	City 9	Product C	3000
5	City 8	Product B	220
6	City 8	Product E	525
7	City 8	Product D	410
8	City 8	Product A	115

```
EVALUATE
    //SummarizedTable =
SUMMARIZE(
    'Raw Data',
    'Raw Data'[City],
    'Raw Data'[Product],
    "Total Weight Grams", SUM('Product Weight'[Weight grams])
) ORDER BY 'Raw Data'[City] DESC
```

Build first calculated table

- Report View
- > Home > Modelling
- >New Table
- > tblCityWeight =

```
tblCityWeight = SUMMARIZE(  
    'Raw Data',  
    'Raw Data'[City],  
    'Raw Data'[Product],  
    "Total Weight Grams", SUM('Product  
Weight'[Weight grams])  
)
```

- Copy and paste the dax code from the aggregation into
- Click on tick to implement formula

Cannot sort calculated table

```
1 tblCityWeight = SUMMARIZE(  
2     'Raw Data',  
3     'Raw Data'[City],  
4     'Raw Data'[Product],  
5     "Total Weight Grams", SUM('Product Weight'[Weight grams])  
6 ) ORDER BY 'Raw Data'[City] DESC
```

⚠ The syntax for 'ORDER' is incorrect. (DAX(SUMMARIZE('Raw Data', 'Raw Data'[City], 'Raw Data'[Product], "Total Weight Grams", SUM('Product Weight'[Weight grams])) ORDER BY 'Raw Data'[City] DESC)).



Exercise

- In the data model - how would we set up a relationship (join) between `tblCityWeight` and `RawData` ?



Summarise

- Introduction to importing data
 - Imported Data – csv
 - Generated visualisation
 - Applied formatting
 - Created own table - geolocation
 - Implemented join
 - Generated visualisation
 - Applied formatting
- Introduction to DAX with copilot
 - Generate aggregation using DAX
- Introduction to data modelling
 - Used aggregation to create new table
 - Implemented join
 - Generated visualisation
 - Applied Formatting