

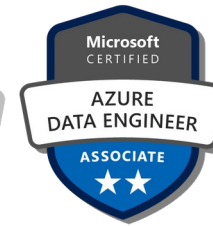
Data Visualization
with
Microsoft Power BI



Presenter



Mohammed Arif, PhD
Lead Data Scientist
Big Data | Machine Learning | AI



Mohammed Arif has more than eighteen (18) years of working experience in Information Communication and Technology (ICT) industry. The highlights of his career are more than seven (7) years of holding various senior management and/or C-Level and had five (5) years of international ICT consultancy exposure in various countries (APAC and Australia), specially on Big Data, Data Engineering, Machine Learning and AI arena.

He is also Certified Trainer for Microsoft & Cloudera.



PowerBI Related Resources

<https://arif.works/powerbi>

Analysis $\stackrel{?}{\equiv}$ Analytics

Analysis



Past

Explain

How? Why?



BI

We can use different tools to explain the previous trends like, PowerBI, Tableau, Qlikview etc.

Analytics



Future

Explore potential future events



ML/AI

We can use different language packages and framework to implement ML/AI model.

Data Analyst Role



Deliver actionable insights by leveraging available data and applying domain expertise.



Collaborate with key stakeholders across verticals to identify business requirements, clean and transform the data.

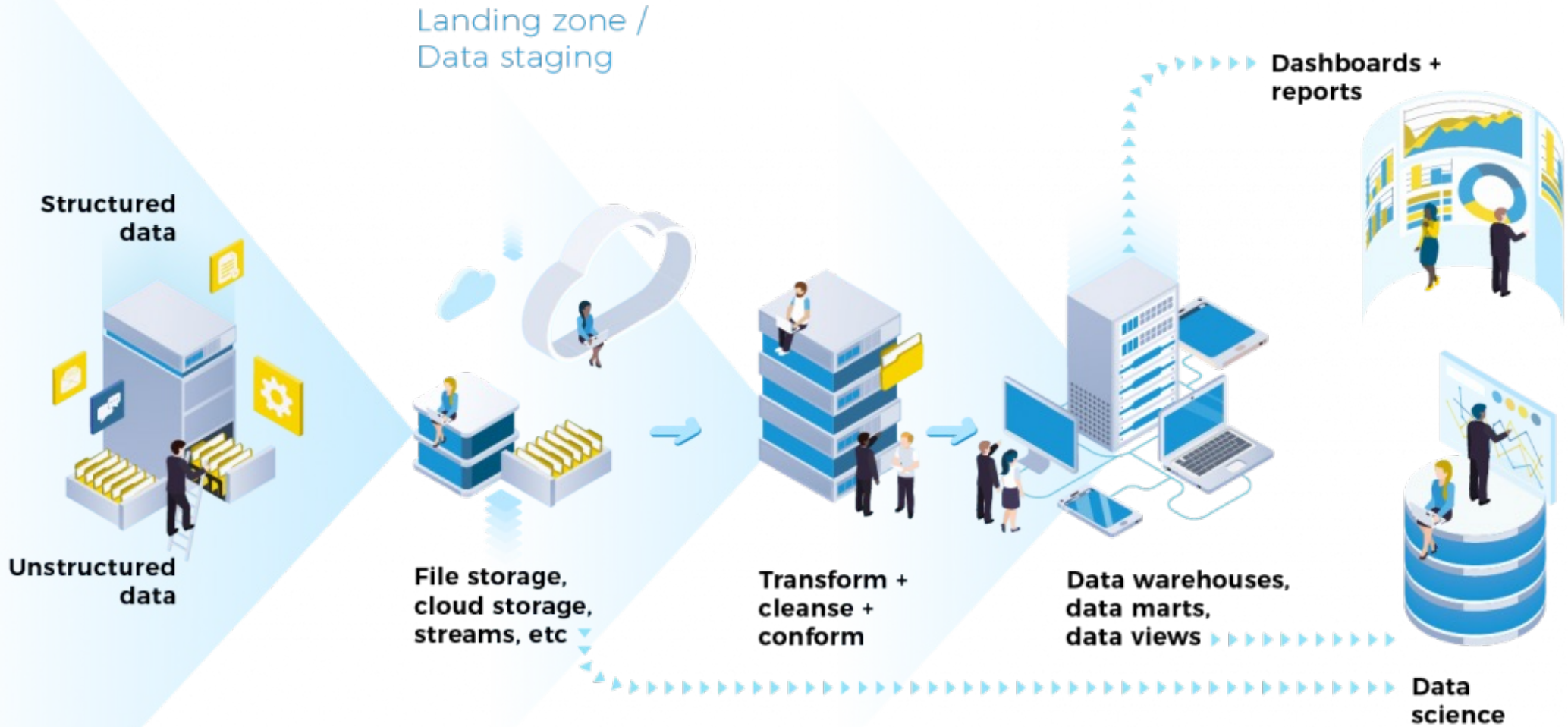


Responsible for designing and building data models, reports, and dashboards using Power BI.

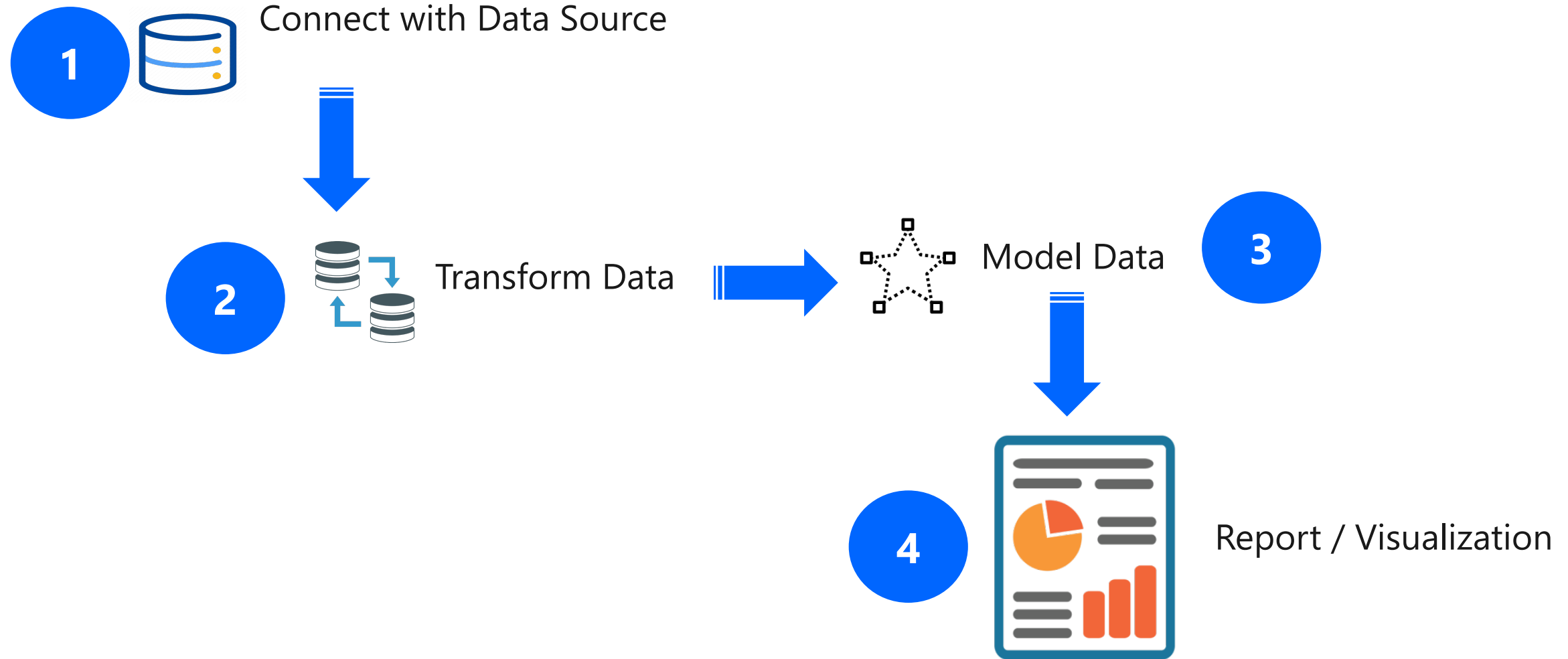


Have proficiency using Power Query (M) and writing expressions by using DAX.

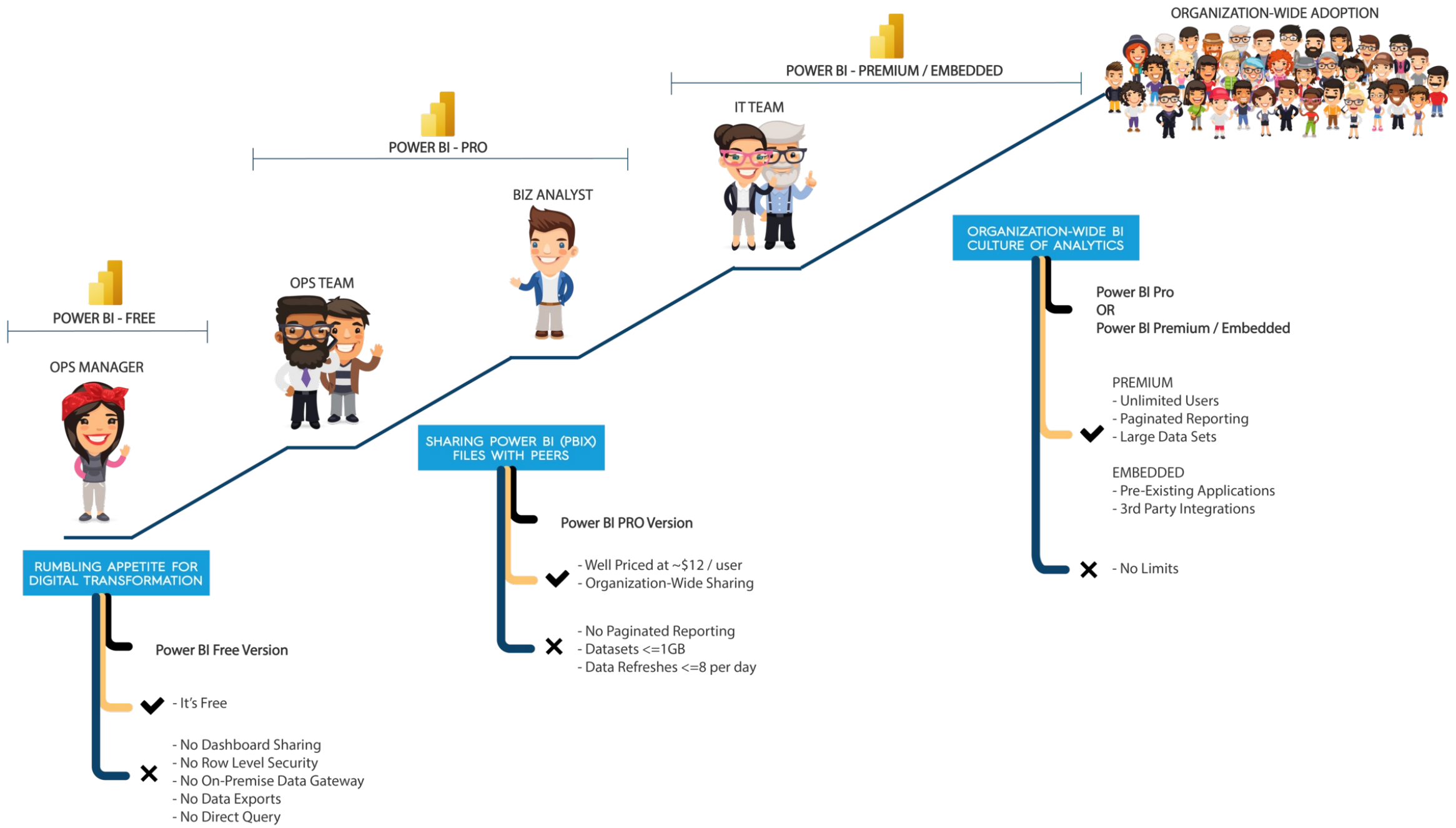
Data Pipeline



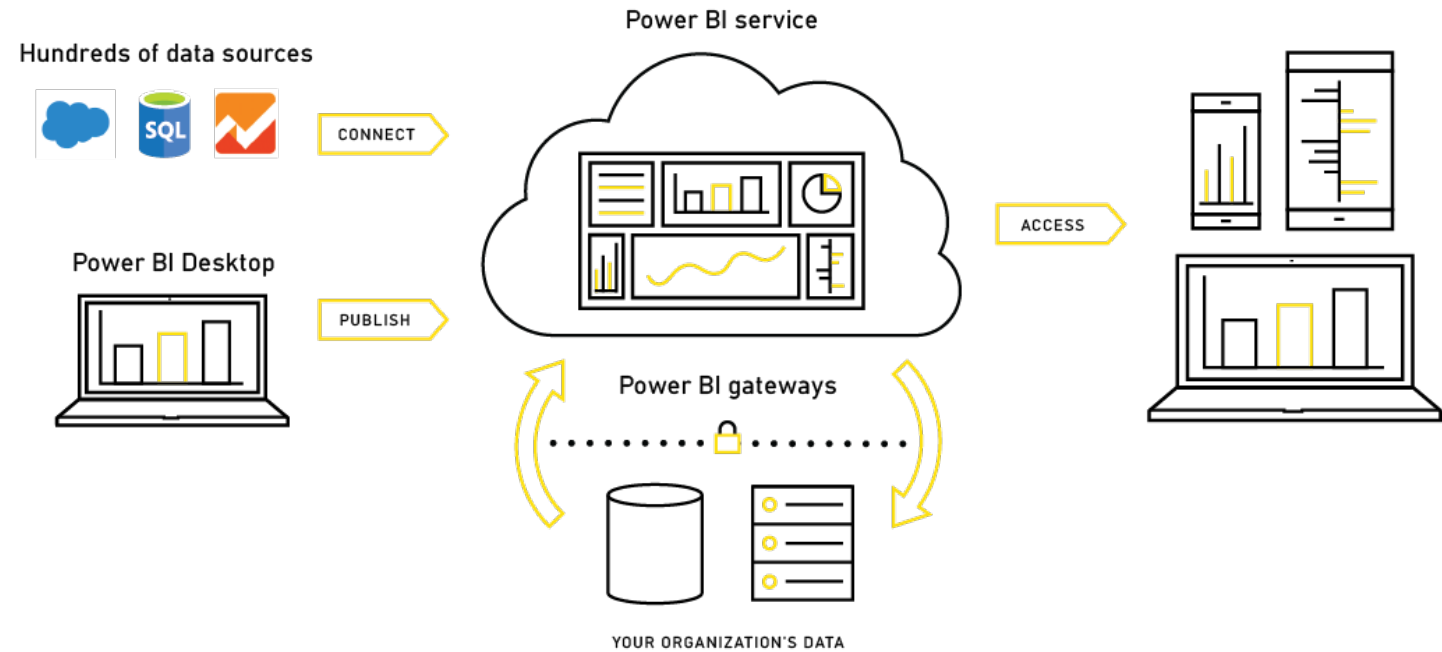
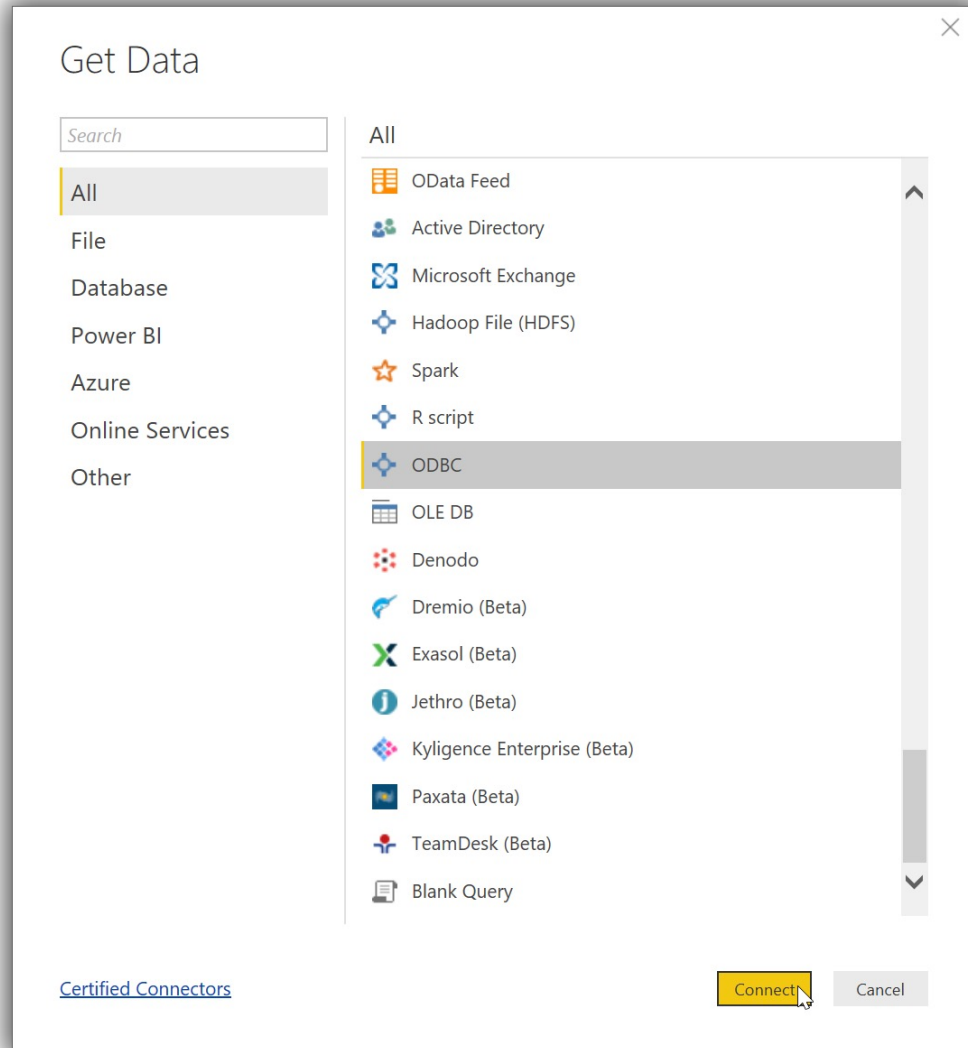
Basic Steps of Data Analysis & Visualization



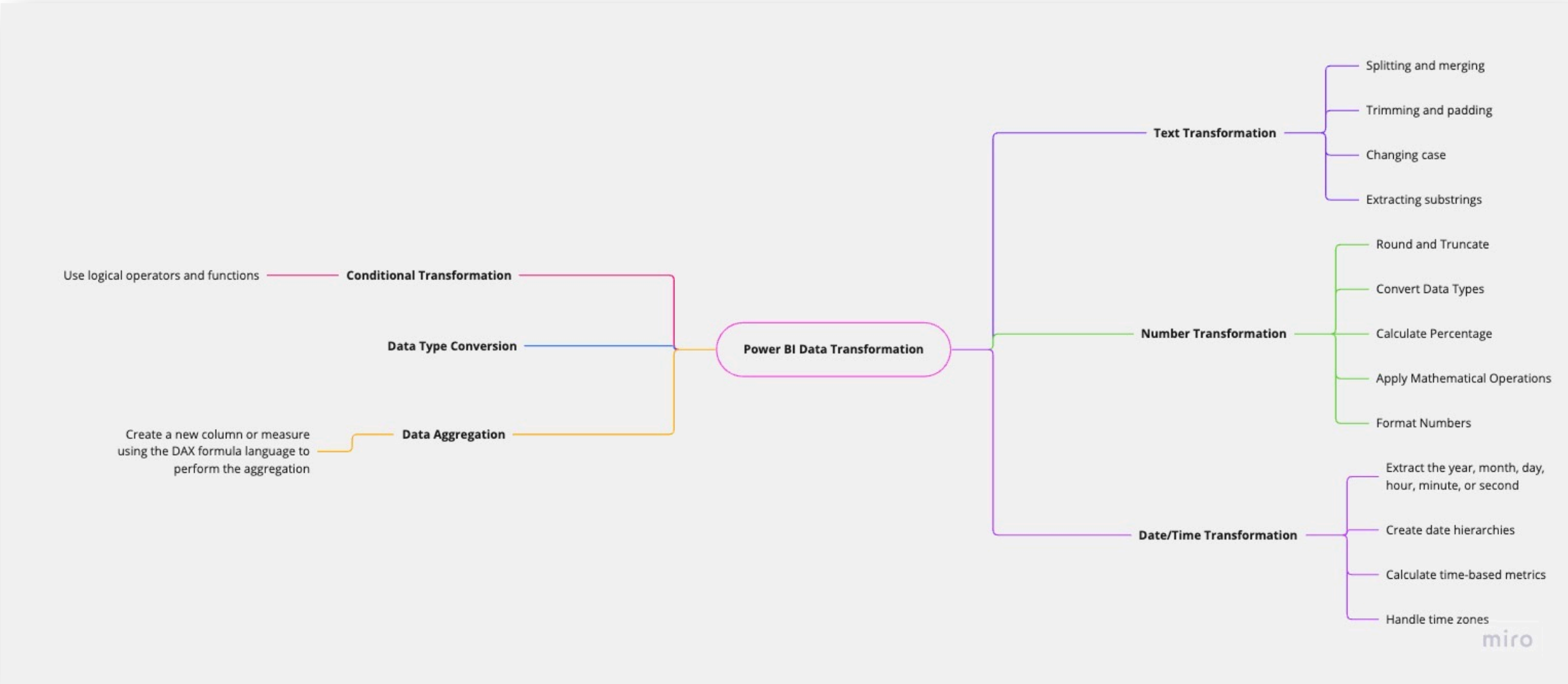
Power BI MATURITY MODEL



Power BI Connectors (Connect with Data Source)



Transform Data



Model Data

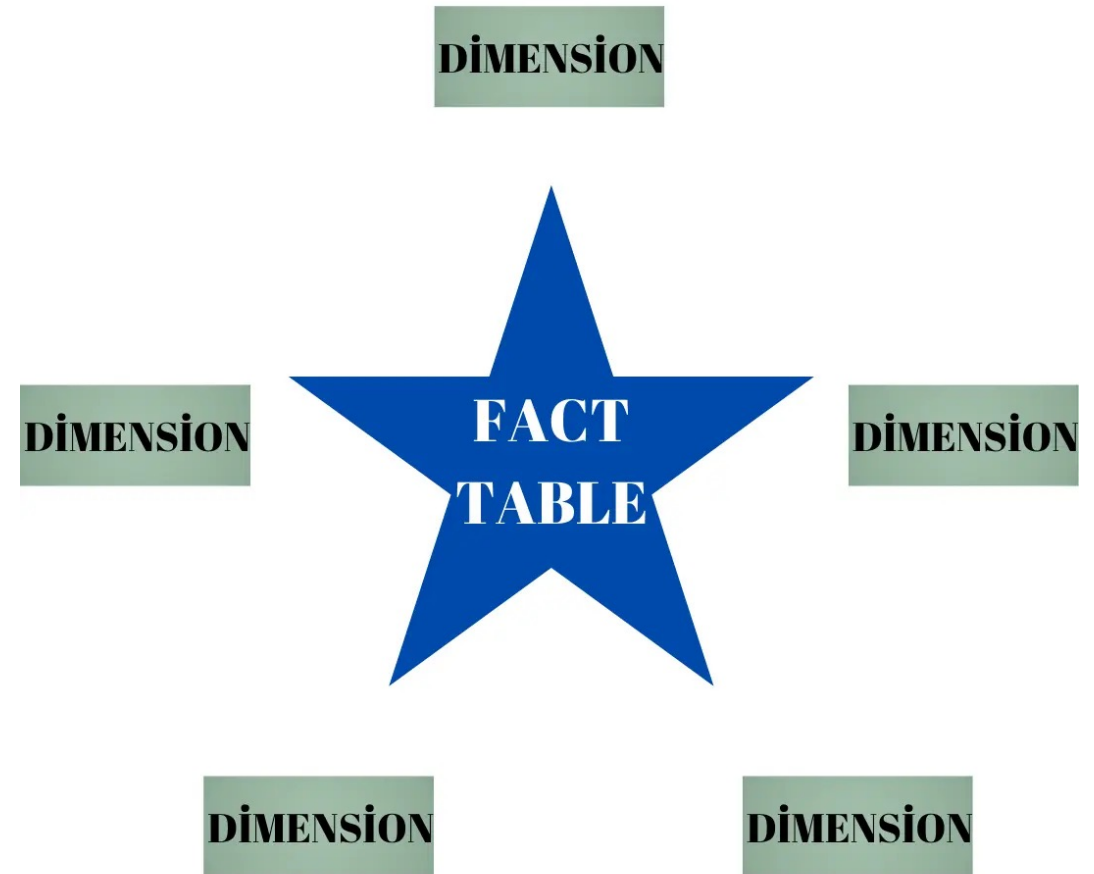
Data model refers to the **abstract model** that demonstrates the **logical structure** of data and the **relationships** that exist in the data.

In Microsoft Power BI data model refers to everything that is loaded from query. In terms of data, a good data model consists of the right number of tables with the **right relationship** between them.



Schemas for Data Modelling

Star schema is a mature modeling approach widely adopted by relational data warehouses. Each table in your dataset is defined as a **dimension** or **fact table** in the star schema, as shown in the image below.



Fact Table & Dimension Table



Fact Table & Dimension Table



A **fact table** holds the data to be analyzed, and a **dimension table** stores data about the ways in which the data in the fact table can be analyzed.

A fact table **works with** dimension tables.

The fact table consists **of two types of columns**.

- The **foreign keys** column allows joins with dimension tables, and
- **Measures columns** contain the data that is being analyzed

Fact Table

Suppose that a company sells products to customers. **Every sale is a fact that happens**, and the fact table is used to record these facts. **Values produced from data collected through observation or an event**. Sales orders, product counts, prices, transaction dates and times, and quantities are all examples of data. Multiple duplicate values can exist in fact tables. For example:

Transaction ID	Customer ID	Product ID	Quantity Sold	Sales Amount
T101	C2001	P51231	2	250
T102	C2002	P51731	5	430
T103	C2002	P51231	6	750
T104	C2003	P59823	3	210
T105	C2006	P54213	1	75

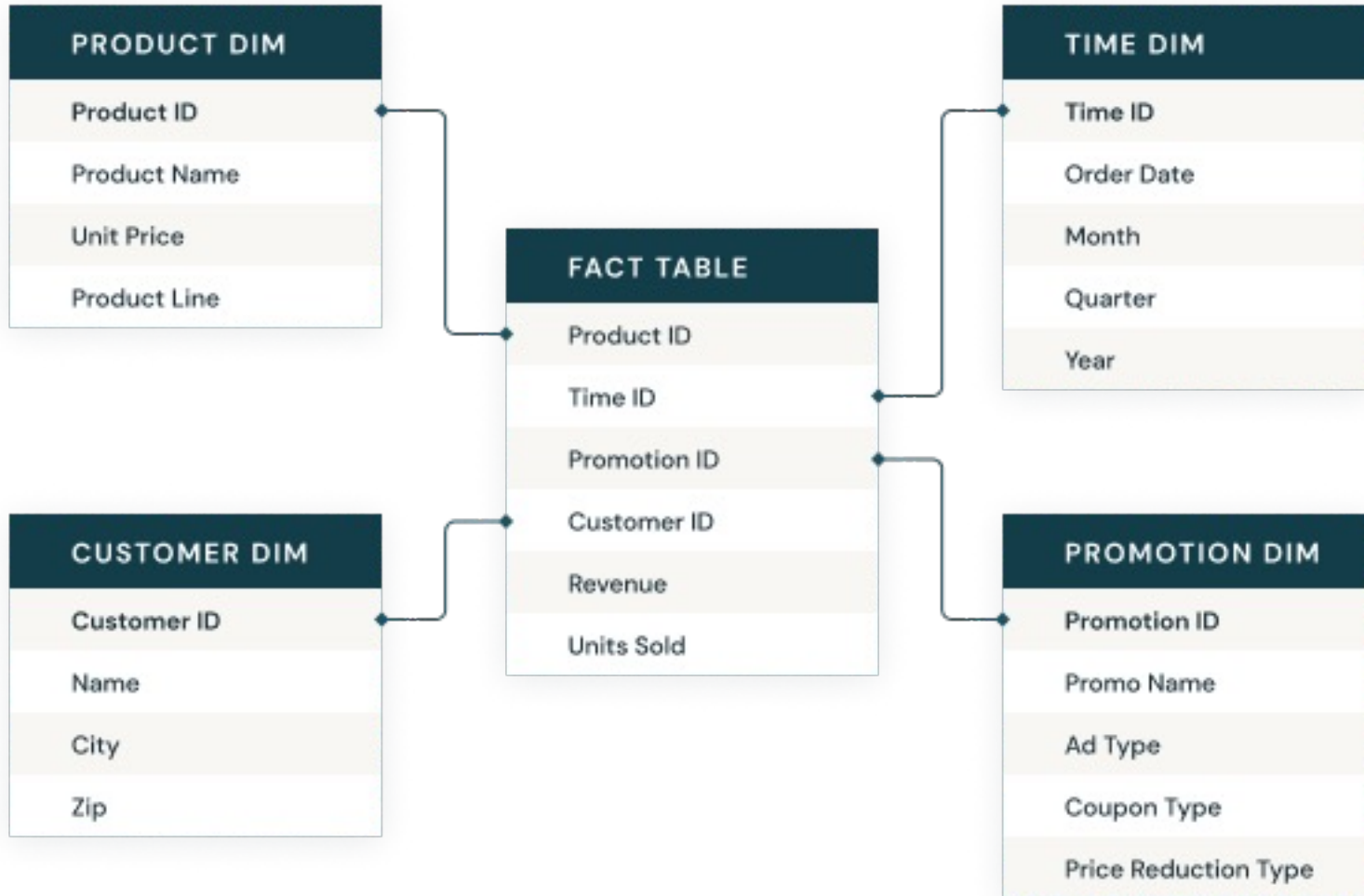
Dimension Table

Contains information on the items, locations, employees, and order kinds found in fact tables.

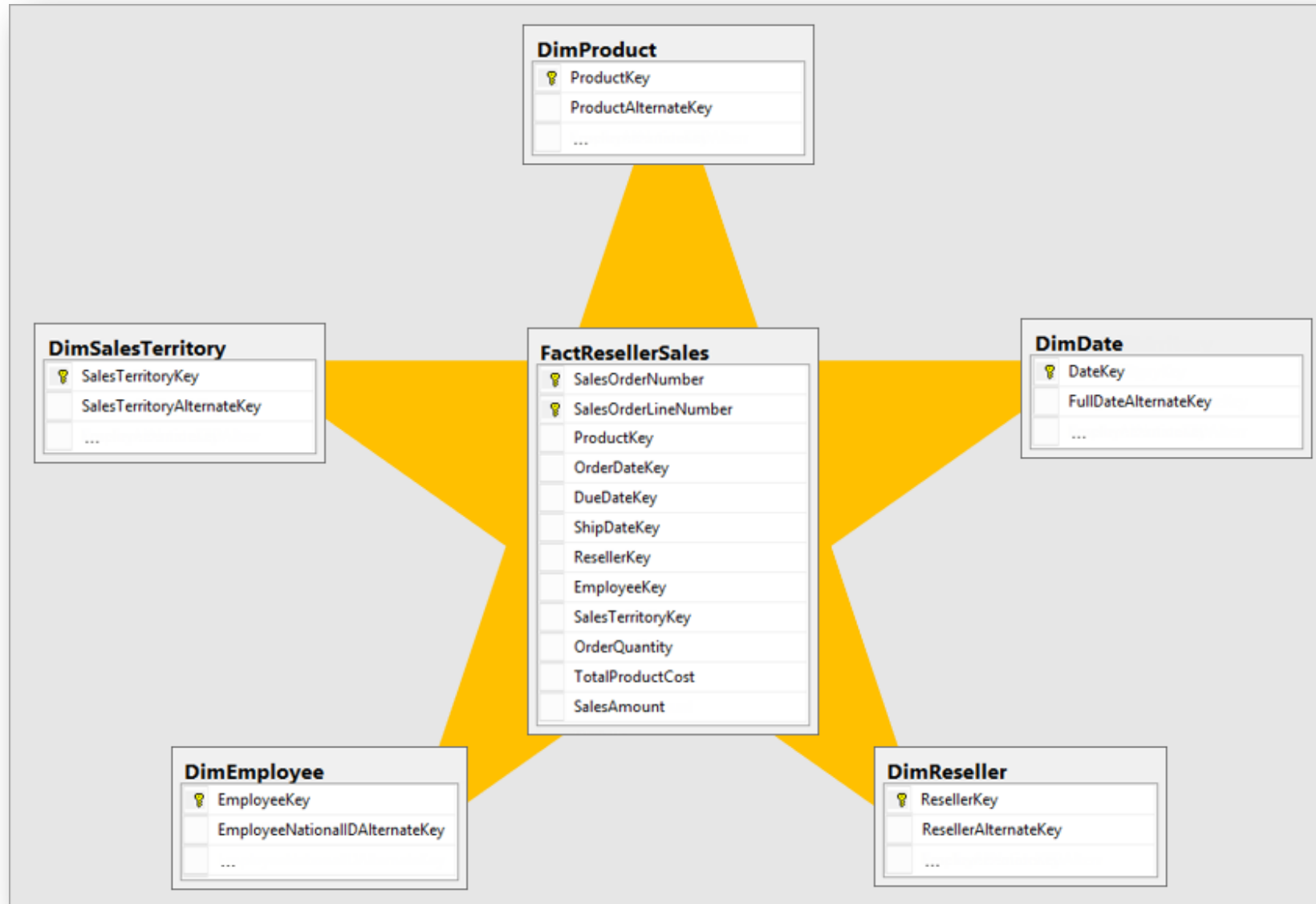
Key columns connect these tables to the fact table. Dimension tables are used in fact tables to filter and group data. Dimension tables, on the other hand, contain unique values; for example, one row in the Products table for each product and one in the Customer table for each customer.

Customer ID	Name	Gender	Income	Education	Region
1	Brian Edge	M	2	3	4
2	Fred Smith	M	3	5	1
3	Sally Jones	F	1	7	3

Star Schema



Fact Table & Dimension Table



Fact Table & Dimension Table



- Dimension tables support **filtering and grouping**
- Fact tables support **summarization**

End of Introduction