POWER BI INTRODUCTION

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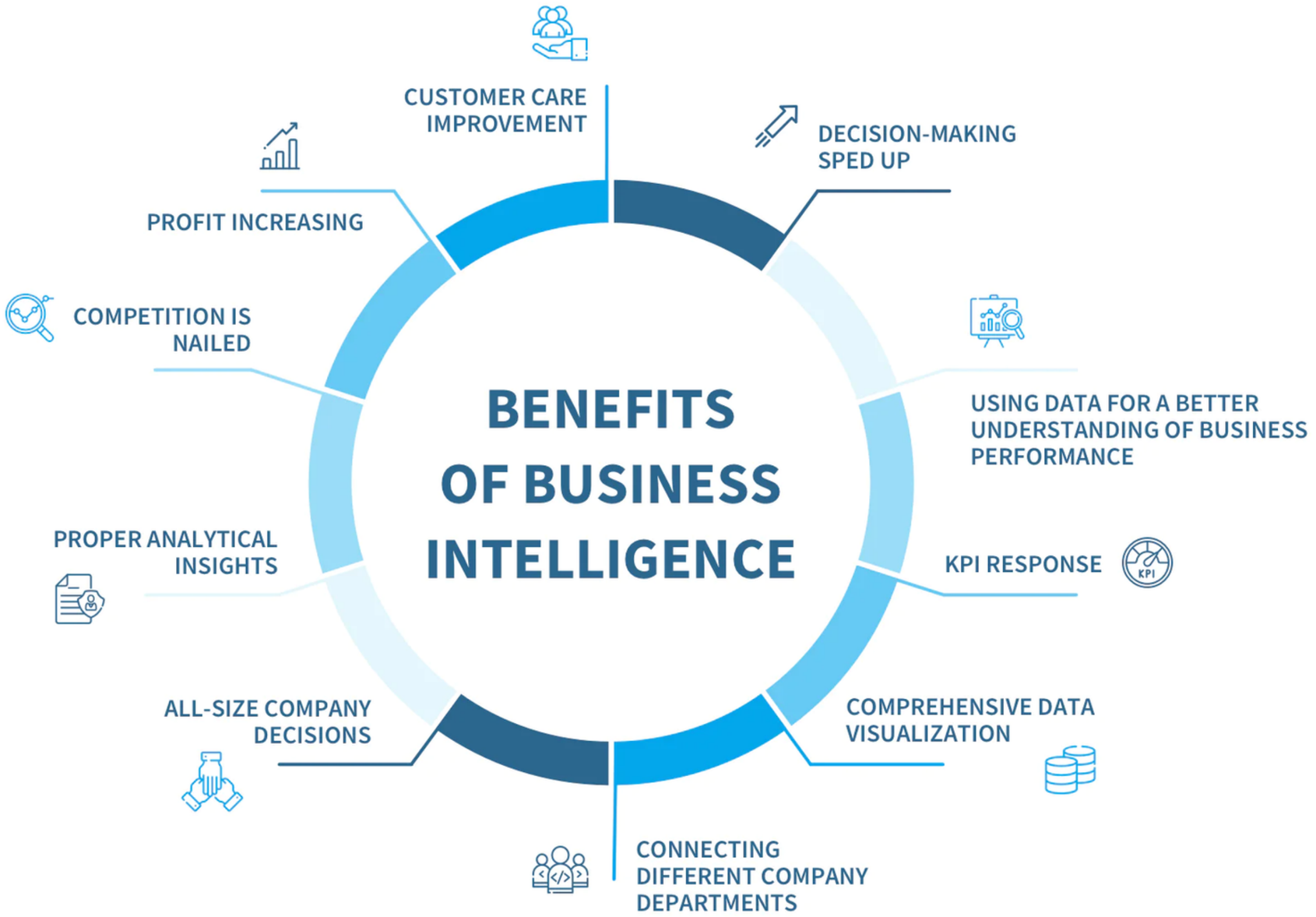
WHAT IS BUSINESS INTELLIGENCE

Business intelligence (BI) is the process of analyzing data to gain insights and make better business decisions. It involves collecting data from various sources, transforming it into a format that is easy to analyze, and then using that data to identify patterns, trends, and opportunities for improvement. BI helps organizations make data-driven decisions to gain a competitive advantage.


BENEFITS OF BUSINESS INTELLIGENCE
CUSTOMER CARE IMPROVEMENT
DECISION-MAKING SPED UP
USING DATA FOR A BETTER UNDERSTANDING OF BUSINESS PERFORMANCE
KPI RESPONSE
KPI
COMPREHENSIVE DATA VISUALIZATION
CONNECTING DIFFERENT COMPANY DEPARTMENTS
ALL-SIZE COMPANY DECISIONS
PROPER ANALYTICAL INSIGHTS
COMPETITION IS NAILED
PROFIT INCREASING

SOME WELL KNOWN BI TOOLS

PROFESSIONS THAT USE BI TOOLS

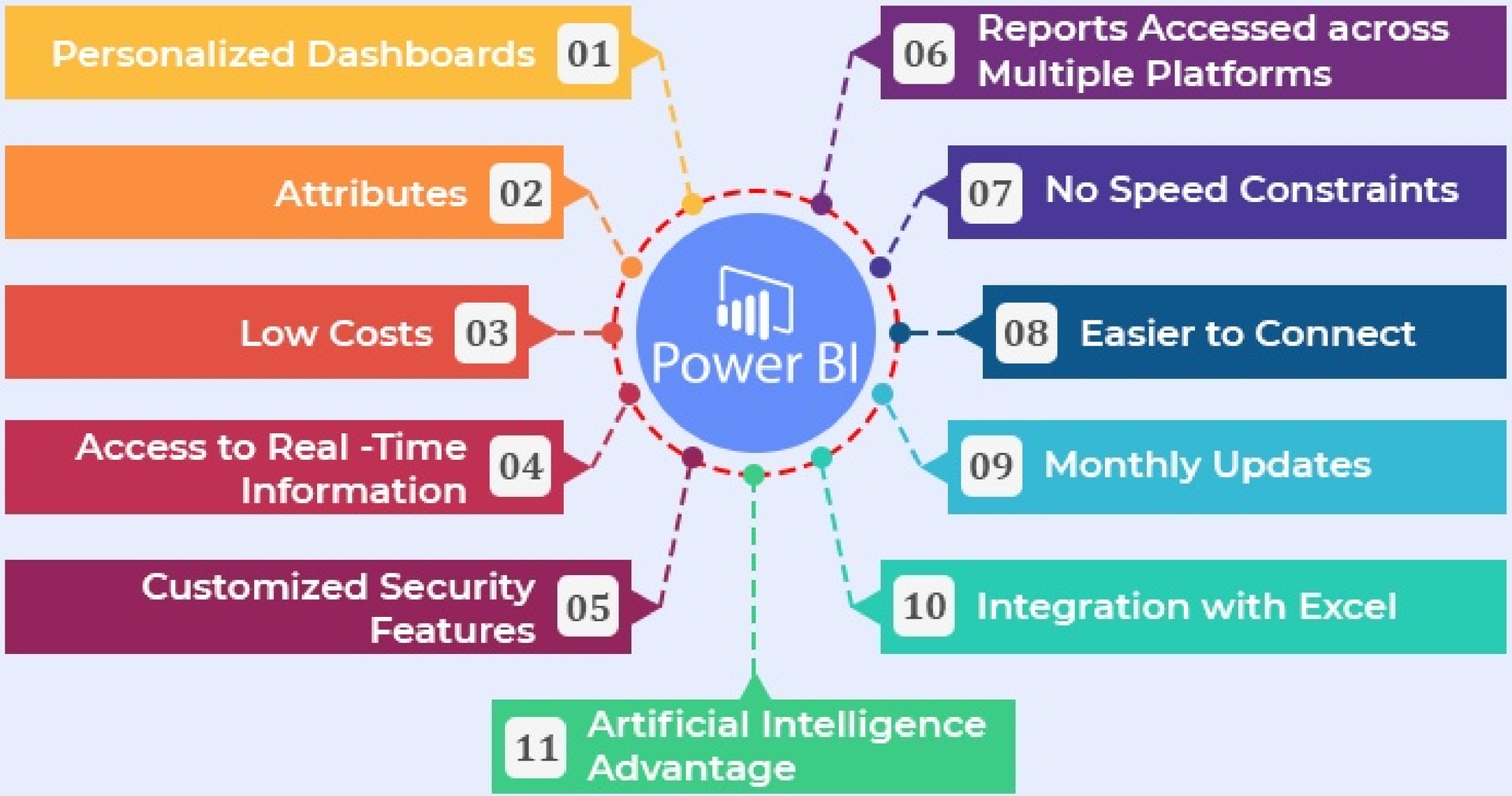
Business intelligence (BI) is used by professionals in a variety of industries and job functions. Here are some examples of professions that use BI:

- **Business Analysts**
- **Data Analysts**
- **Data Scientists**
- **IT Professionals**
- **Marketing Professionals**
- **Financial Analysts**
- **Operations Professionals**

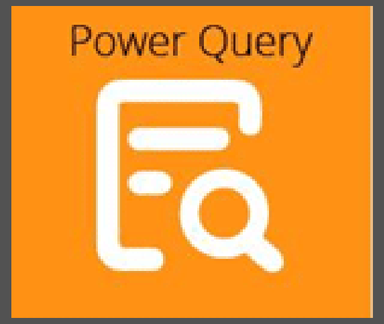
WHAT IS POWER BI

A business analytics service developed by Microsoft that allows users to analyze and visualize data from a wide range of sources.

Benefits of Power BI

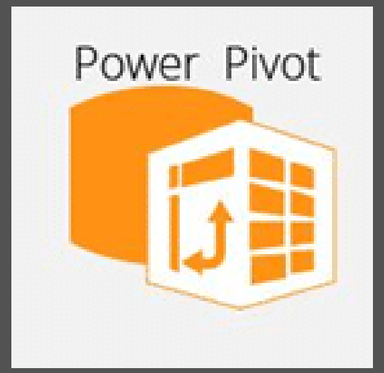


COMPONENTS OF POWER BI



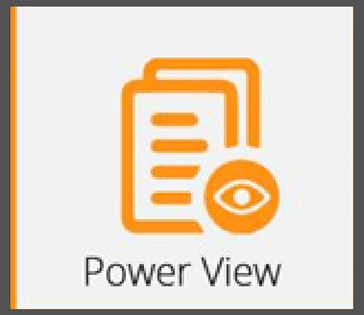
Power Query

Power Query is the data transformation and mash up the engine. It enables you to discover, connect, combine, and refine data sources to meet your analysis need. It can be downloaded as an add-in for Excel or can be used as part of the Power BI Desktop.



Power Pivot

Power Pivot is a data modeling technique that lets you create data models, establish relationships, and create calculations. It uses Data Analysis Expression (DAX) language to model simple and complex data.



Power View

Power View is a technology that is available in Excel, Sharepoint, SQL Server, and Power BI. It lets you create interactive charts, graphs, maps, and other visuals that bring your data to life. It can connect to data sources and filter data for each data visualization element or the entire report.

Power BI Desktop

Power BI Desktop is a development tool for Power Query, Power Pivot, and Power View. With Power BI Desktop, you have everything under the same solution, and it is easier to develop BI and data analysis experience.

Power BI Services

You can publish your report to Power BI service. There are multiple ways to do this- sharing the report link via email, chat, or any other communication channel., sharing it in embed form in a website or application that can be accessed worldwide or using the built-in sharing features of the Power BI service to share the report

Power BI Service offers a mobile app for iOS, Android, and Windows devices, allowing users to access and interact with their data on the go.

WHAT IS DAX?

DAX (Data Analysis Expressions) is a formula language that is used to create calculated columns and measures in Power BI. It provides a range of functions and operators for working with data in a data model.

BUILDING BLOCKS OF POWER BI

Datasets

A dataset is a collection of data that has been imported into Power BI from one or more data sources. Datasets can be used to create reports, dashboards, and visualizations. Support for various data sources is one of the vital features of Power BI. You can access various sources of data such as Excel, CSV, SQL Server, Web files, etc. to create interactive visualizations.

Visualizations

A visualization is a graphical representation of data, such as a chart, table, or map. Power BI provides a wide range of visualizations that can be used to analyze and present data in a meaningful way.

Reports

A report is a more detailed view of data that provides deeper insights and analysis. Reports can include multiple pages, each with its own set of visualizations, tables, and charts.Reports, can be used to analyze historical data and trends over time.

Dashboards

A dashboard is a collection of visualizations, such as charts, tables, and maps, that provide a high-level overview of key metrics and KPIs. Dashboards are typically used to monitor business performance and track progress towards goals.while a dashboard in Power BI is typically a single page, users have the flexibility to create multi-page dashboards as well. Dashboards are often used to monitor real-time data, such as website traffic, sales, or social media activity.

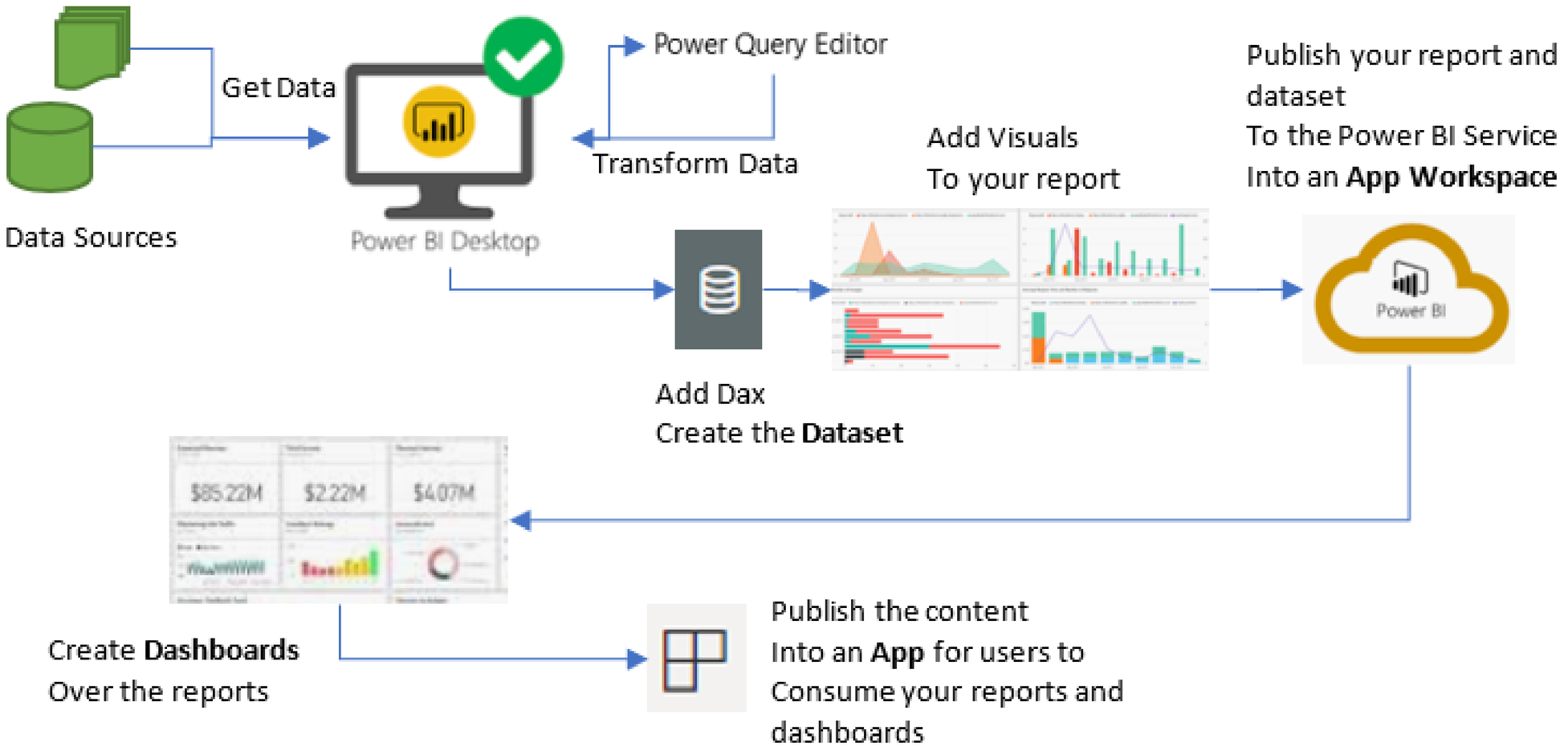
Tiles

A tile is a single visualization or KPI that can be added to a dashboard or report. Tiles provide a way to display key metrics and data in a compact and easy-to-understand format.

WHAT ARE KPIs?

KPI stands for Key Performance Indicator. A KPI is a measurable value that indicates how well an organization or individual is achieving its goals or objectives. KPIs are used to monitor performance over time and to assess progress towards goals. They are typically specific, measurable, and actionable, and can be used to track both quantitative and qualitative measures of performance.

Process Flow in Power BI



Overview of the Power BI Workflow

- Installing Power BI Dekstop
- Data Collection
- Data Processing
- Data Modelling
- Data Analysis
- Sharing reports and dashboards through Power BI Service

INSTALLING POWER BI DEKSTOP

You can download Power BI Desktop from the website here:
https://powerbi.microsoft.com/en-us/desktop/

iIt is also available on the MICROSOFT STORE for Microsoft users. Microsoft has developed a Power BI app for iOS, which is available for download from the APPLE APP STORE.

DATA COLLECTION

This involves collecting data from various sources, such as transactional systems, customer feedback forms, social media platforms, and other external sources. The data collected in this stage is typically raw and needs to be refined and processed for analysis.

The first stage in the Power BI workflow is to connect to one or more data sources, such as Excel spreadsheets, SQL databases, Web APIs, or cloud-based services like Salesforce or Google Analytics. Power BI provides a range of connectors that allow users to connect to a wide variety of data sources. In addition, Power BI also provides several features and capabilities for working with big data.

DATA PROCESSING

In this stage, the collected data is cleaned, transformed, and organized into a format that is suitable for analysis. This involves data profiling, data cleansing, data aggregation, and other techniques to ensure data accuracy and consistency.

Once data is connected, users can use Power Query, a data transformation and cleansing tool, to reshape and clean the data as needed. This can include tasks like filtering, sorting, and merging data, as well as removing duplicates and dealing with missing or incomplete data.

DATA MODELLING

Once the data is transformed and cleaned, users can create a data model within Power BI. The data model defines the relationships between tables and columns, and can include calculated columns and measures that provide additional insights into the data.

In Power BI, fact tables and dimensional tables are used to model data in a data model. The fact table is typically represented as a table in the data model, and each row in the table represents a unique event or transaction. The table contains measures, which are the quantitative data that you want to analyze, such as sales revenue or customer orders. The dimensional tables in Power BI are typically represented as separate tables in the data model, and each table contains descriptive attributes of the business process or event, such as product, time, and location. The tables are connected to the fact table through foreign keys. The fact and dimensional tables are connected to each other through star schema.

WHAT IS A STAR SCHEMA?

A star schema is a type of database schema used in data warehousing. It is called a "star" schema because its diagram resembles a star, with a central fact table and multiple dimension tables radiating out from it. The fact table contains the numeric measurements or facts of the business process, such as sales revenue or units sold, and the dimension tables contain the descriptive information about the facts, such as time, product, and location.

The star schema is designed to optimize queries for decision support purposes, such as data mining and business intelligence reporting. It provides a simple and intuitive structure for organizing data that is easy to understand and navigate. Because the fact table is at the center of the schema, it can be quickly joined to any of the dimension tables to answer a wide range of analytical questions.

WHAT ARE KPIs?

Some of the benefits of a star schema include:

- Simplified and optimized querying: The star schema's structure allows for efficient querying and aggregation of data, making it easier to analyze large amounts of data quickly.
- Improved performance: The simplified structure of a star schema makes it easier for database management systems to optimize performance, resulting in faster query response times.
- Enhanced data quality: By separating data into fact and dimension tables, a star schema can help improve data quality and consistency, as each piece of information is stored in only one place.
- Easier to understand: The star schema's simple and intuitive structure makes it easier for users to understand and navigate the data, which can lead to better decisionmaking.

DATA ANALYSIS

In this stage, the processed data is analyzed using various BI tools and techniques such as reporting, data visualization, OLAP (Online Analytical Processing), and data mining. The goal of data analysis is to extract insights and generate meaningful reports that can be used to make informed business decisions.

With the data model in place, users can create visualizations and reports that provide insights into the data. This includes selecting the appropriate visualizations, adding filters and slicers, and customizing the appearance of the report.

SHARING REPORTS AND DASHBOARDS

Once a report is created, users can share it with others via the Power BI Service, which is a cloud-based platform for sharing and collaborating onreports and dashboards. Reports can be shared with specific individuals or groups within an organization, or with external users via email. Reports can also be embedded into other web applications or portals using an embed code.