INTRODUCTION TO DATA ANALYTICS

Research Team ,MKU
Dr.S.JOTHILAKSHMI, M.Sc, M.Phil, PhD.
Asst.Professor,Dept of Data Scinece
The American College,
Madurai

Learning objectives

- Data and its importance
- Data Analytics and its types
- Why Data Analytics is important in today Business Environment
- How statisitics,Data Analytics and Data Science are interrelated
- Why python?

Data and its importance

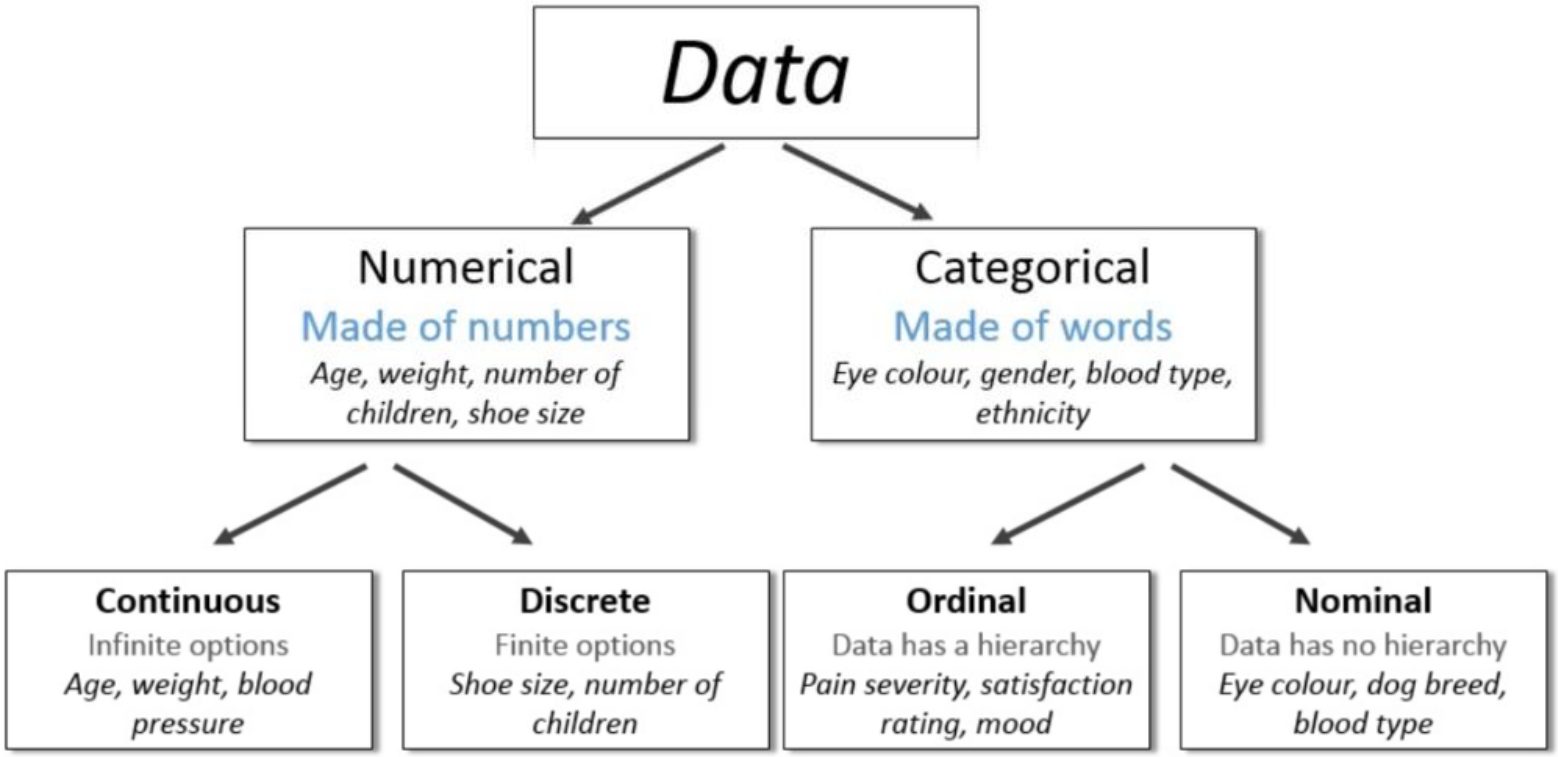
- Variable, Measurement and Data
- What is generating so much Data?
- How Data Value add to the Business?
- Why Data is important?

Variable,Measurement,Data

- Variable- is a Characteristic of any entity being studied that is capable of taking on different values
- Measurement-is a process is used to assign numbers to particular attributes or variables

- Data- Data are recorded Measurements

Types of data

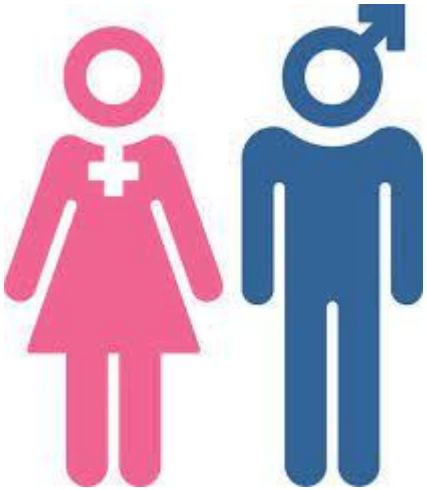


Level of Measurements

- Nominal- Low level of Measurements
- Ordinal
- Interval
- Ratio- Highest level of Measurements

Nominal

- A Nominal Scale classifies data into distinct categories in which no ranking is implied
- Example: Gender, Marital Status



Ordinal Scale

- An Ordinal scale classifies data into distinct categories in which ranking is implied.
- Example
- Attendance –good, Average,poor
- Student grade- O,A,B,C

Interval Scale

- An Interval Scale is an ordered in which the difference between measurement is meaningful quantity but the measurements do not have the true zero value.
- Example
- Temperature in Fahrenheit
- year

Ratio scale

- A ratio Scale is an ordered in which the difference between the measurement is a meaningful quantity and the measurements have a true zero point
- Example
  - Weight
  - Age
  - Salary

Impact of Choice of Measurement Scale

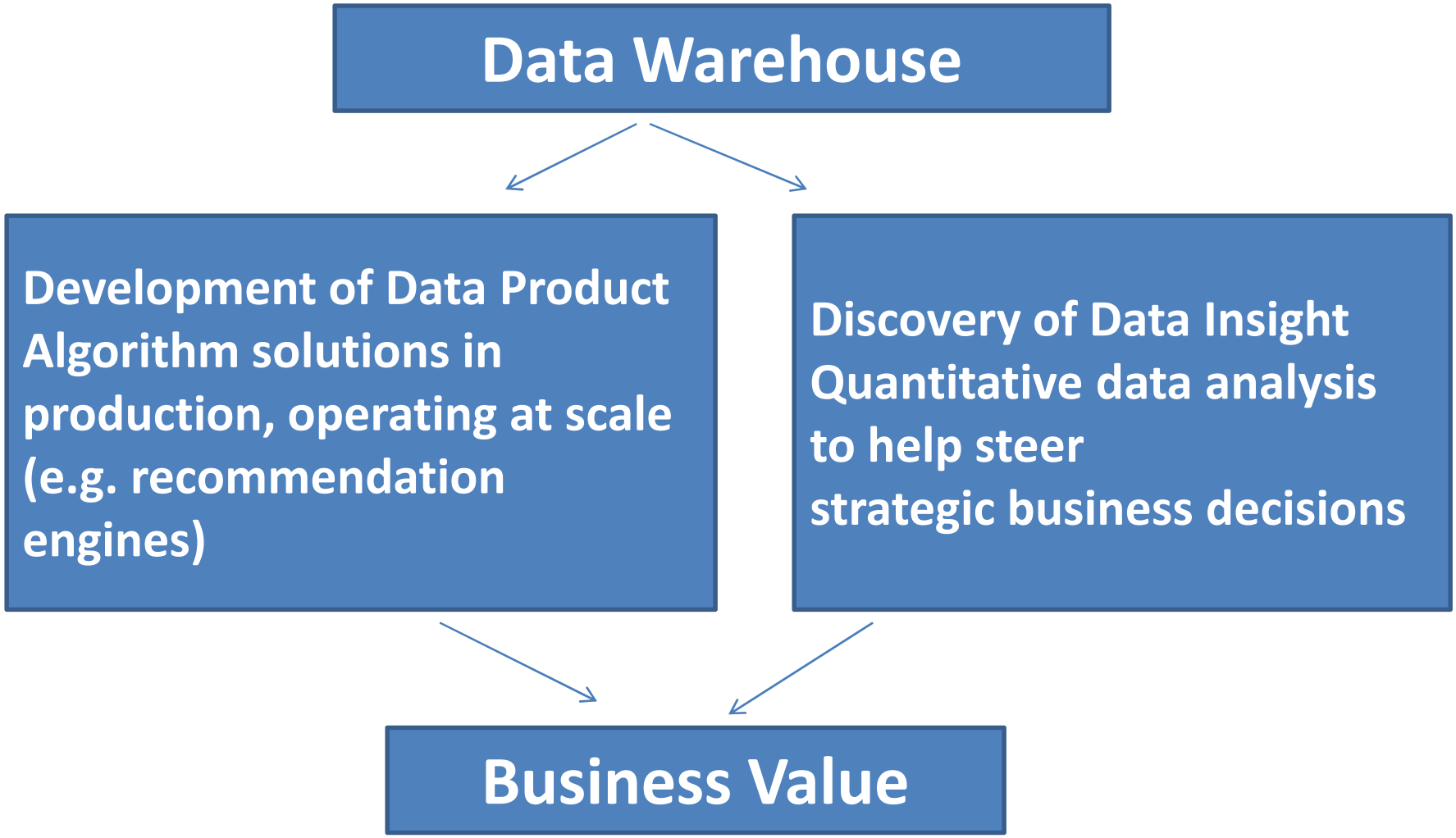
Data level	Meaningful operations	Statistical Methods
Nominal	Classifying Counting	Non Parametric
Ordinal	All of the above plus ranking	Non Parametric
Interval	All of the above plus , Addition, Subtraction	Parametric
Ratio	All of the above plus Multiplication, Division	Parametric

What is generating so much Data

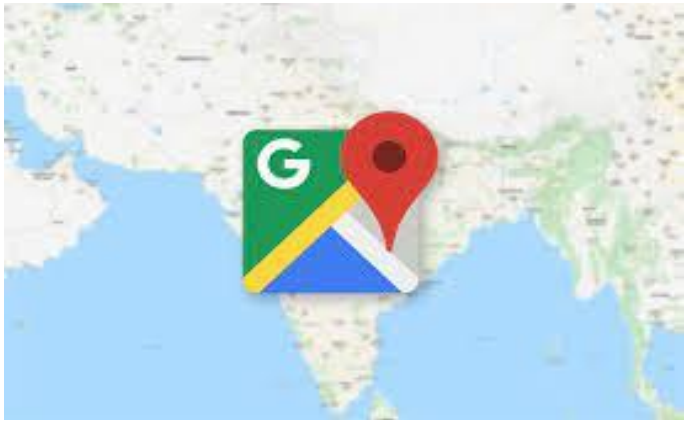
- Data can be generated by
  - Human
  - Machine
  - Human or Machine

It can be generated anywhere and stored in structured and unstructured format

How Data add Value to Business?




GPS (global positioning system)
Rear Camera
Video cameras




RECOMMENDATION
ENGINE

Why Data is important

- Data helps in make better decisions
- Data helps in solve problems by finding the reason for under performance
- Data helps one to evaluate the performance
- Data help one improve process
- Data helps one understand consumers and Markets

Data Analytics

- Analytics is defined process” the scientific process of transforming data into insights for making better decisions”

- Analytics is use of data, information technology, Statistical analysis, quantitative methods, mathmatical and computerbased-model to help manager gain improved insight about their business operations and make better decisions-j amesEven

Why Analytics is important?

- Opportunities abounds for the use of analytics and big data such as

1. Determining credit risk
2. Developing new medicines
3. Finding more efficient ways to deliver the products and service
4. Preventing fraud
5. Uncovering cyber threads
6. Retaining the most valuable customer

Data Analysis

- Data Analysis is the process of examining, transforming and arranging raw data in a specific way data to generate useful information
- Data Analysis allows for the evaluation of data through analytical and logical reasoning to lead to some sort of outcome
- Data Analysis is multi-face process that involves a number of steps, approaches and techniques

Analysis

past

Explain

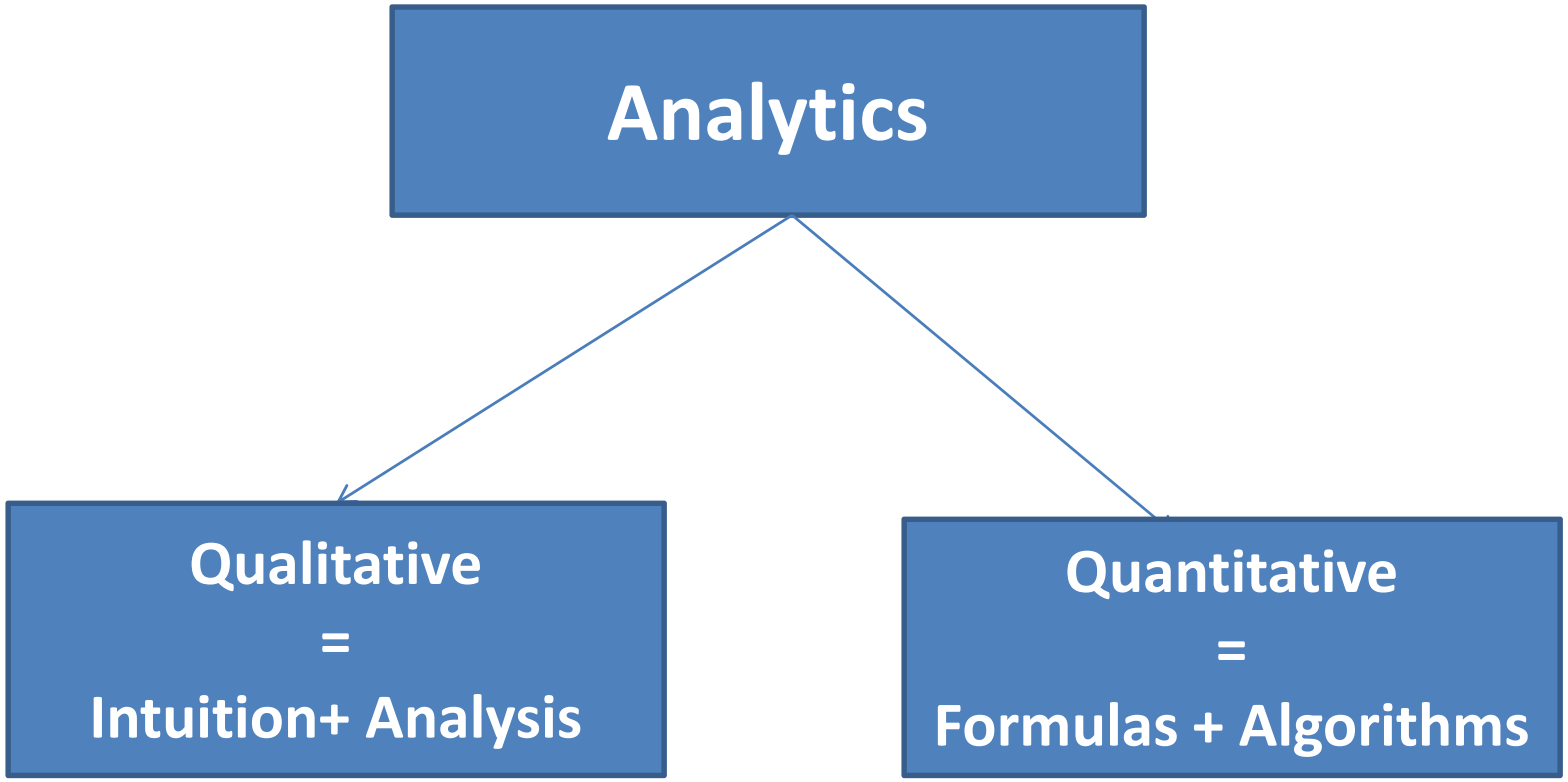
How?

why?

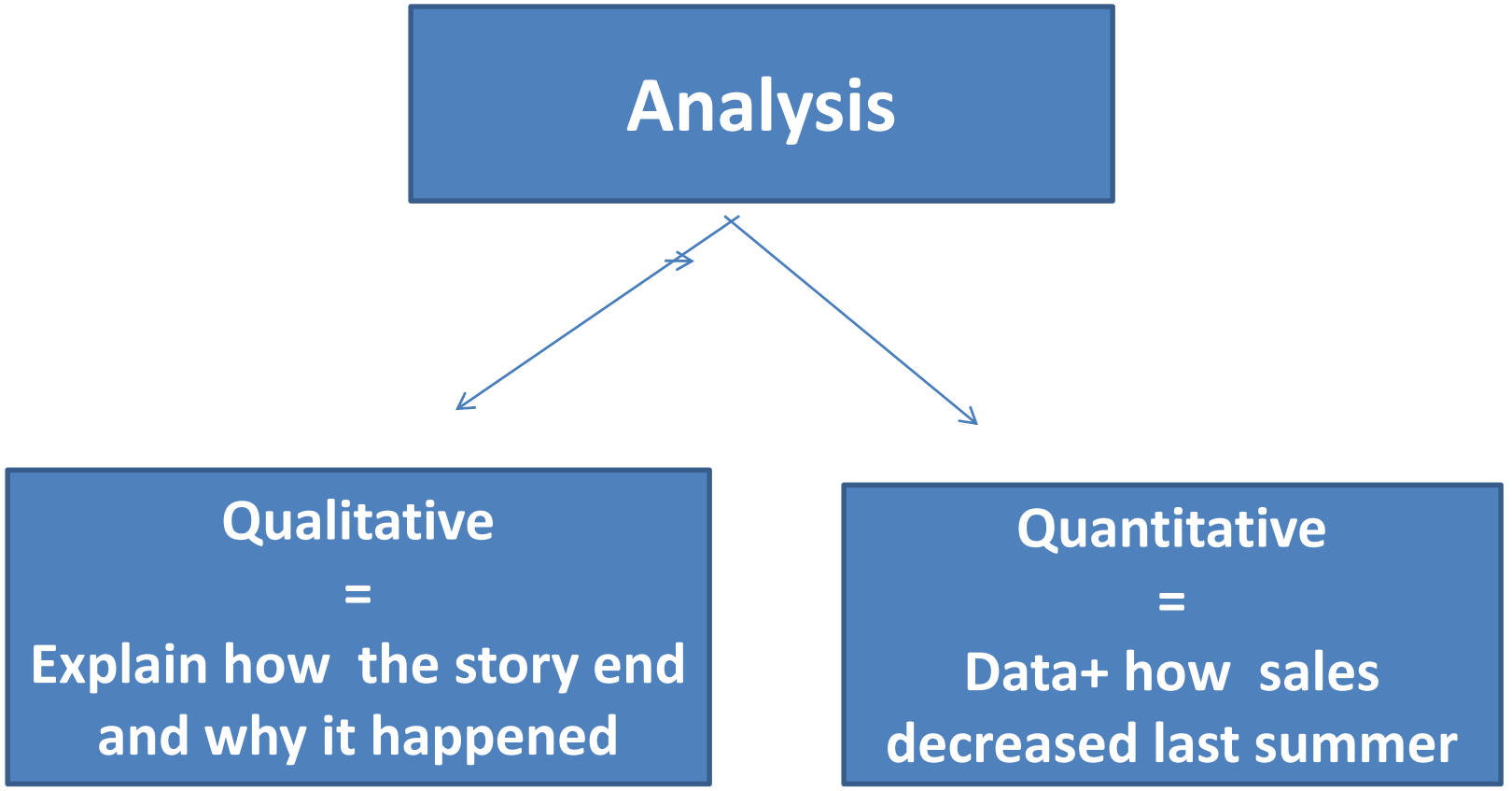
Analytics

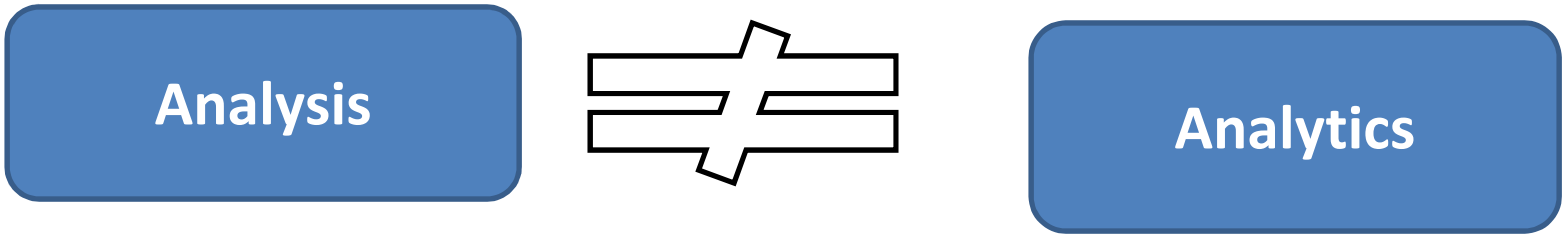
Explore potential future events

Data Analytics Vs. Data Analysis



Data Analytics Vs. Data Analysis



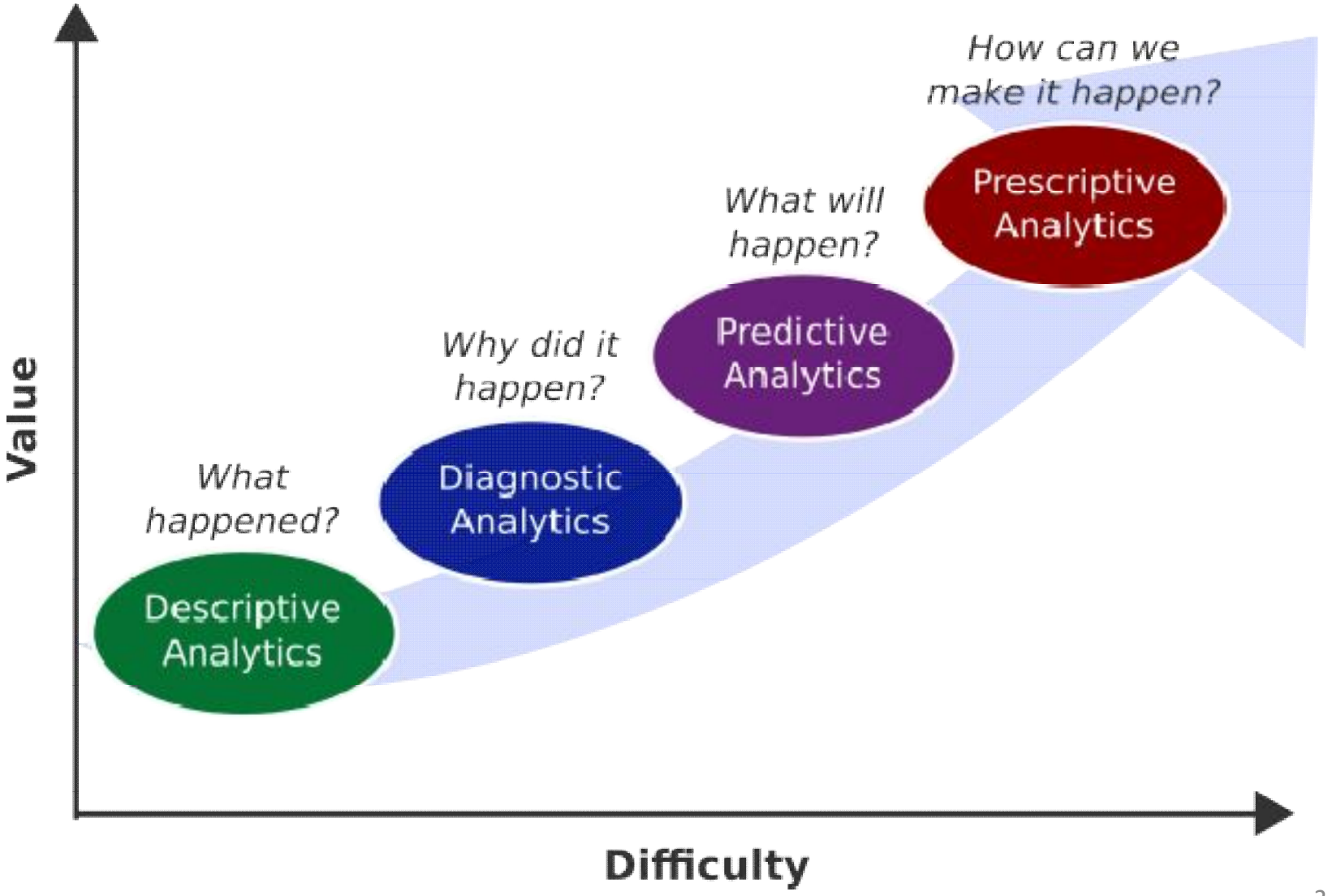


- Analysis
  - Study of past data
- Analytics
  - Study of the future events with help of past data

Classification of Data Analytics

- Based on the Phase of work flow, there are four major Analytics method
- Descriptive Analytics
- Diagnostic Analytics
- Predictive Analytics
- Prescriptive Analytics

Classification of Data Analytics



Descriptive Analytics

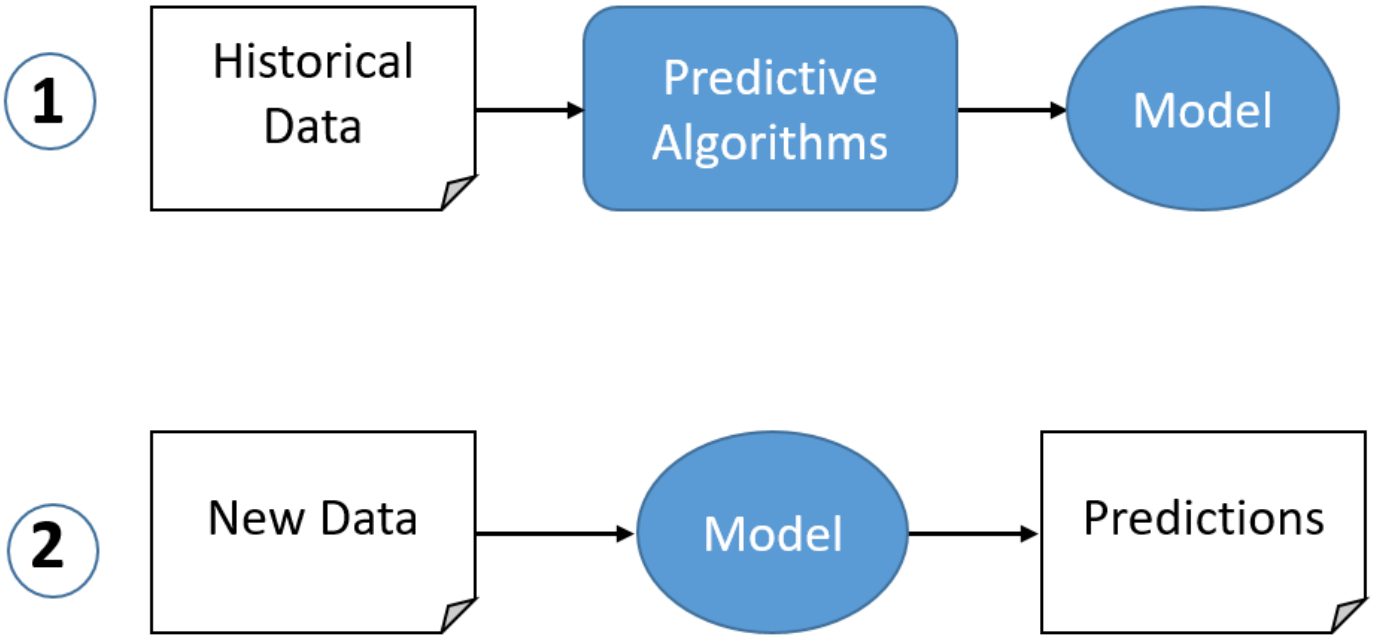
- Descriptive Analytics is the conventional form of Business intelligence
- It seeks to provide a summary view of facts and figures in understandable format
- Example of Descriptive Analytics
  - Reports
  - Dataquries
  - Data Visualization
  - Data Dashboard

Diagnostic Analytics

- Diagnostic Analytics is a form of advanced Analytics which examines data or content to answer the question? Why did it happen?
- In a business environment tools for descriptive analytics and Diagnostic analytics go parallel
- It uses techniques
  - Data Discovery
  - Data Mining
  - Correlations

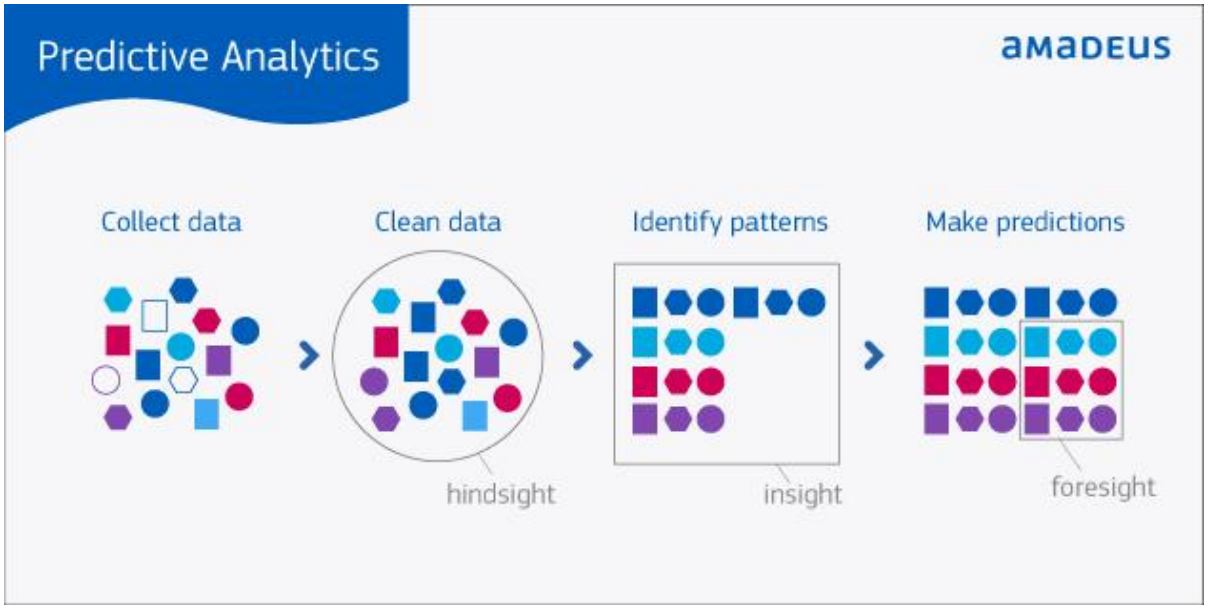
Predictive Analytics

- Predictive Analytics helps to forecast based on the current events



Example

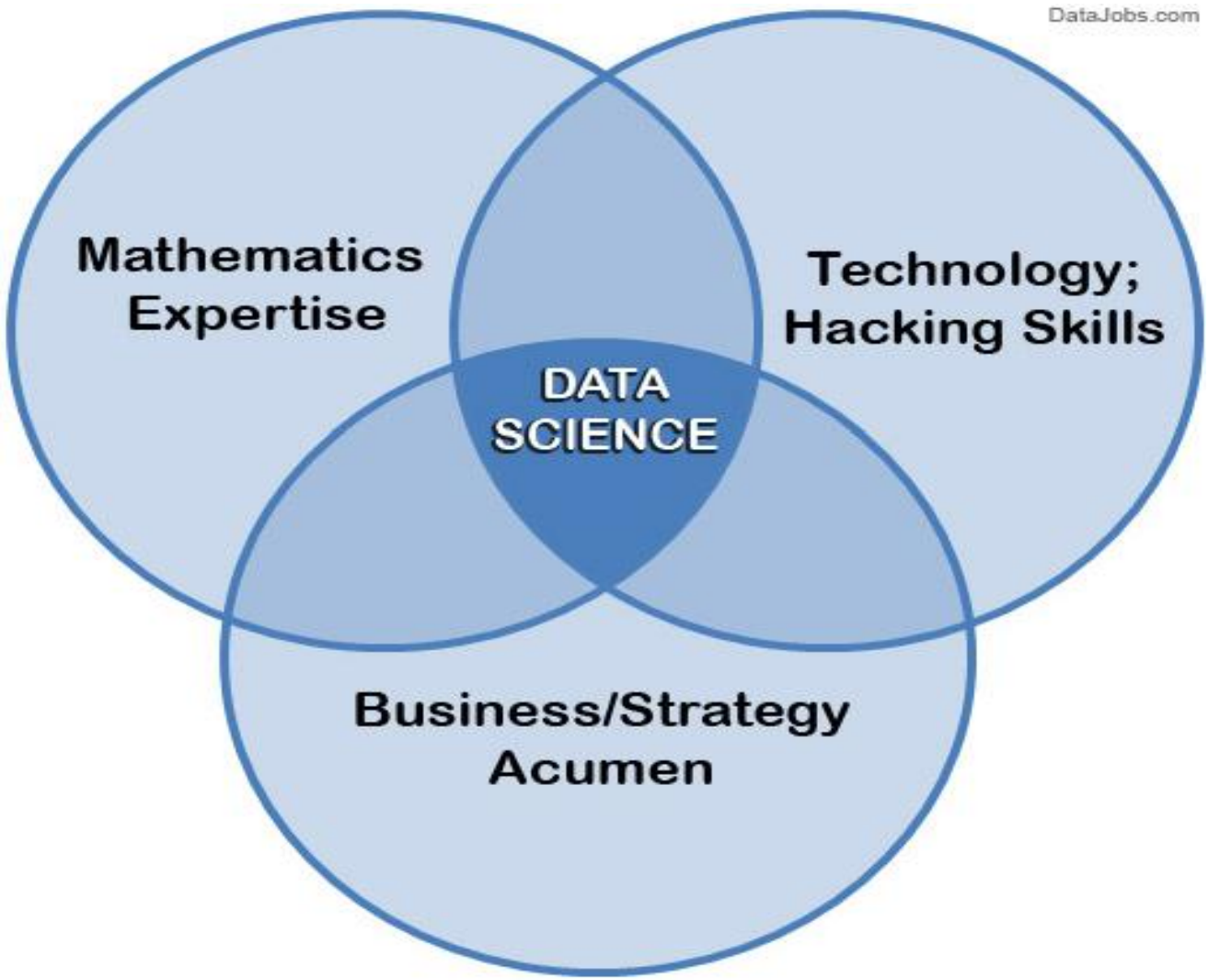
- Set of techniques that use model constructed from past data to predict the future
- Linear regression,Data mining
- Time series analysis and forecasting



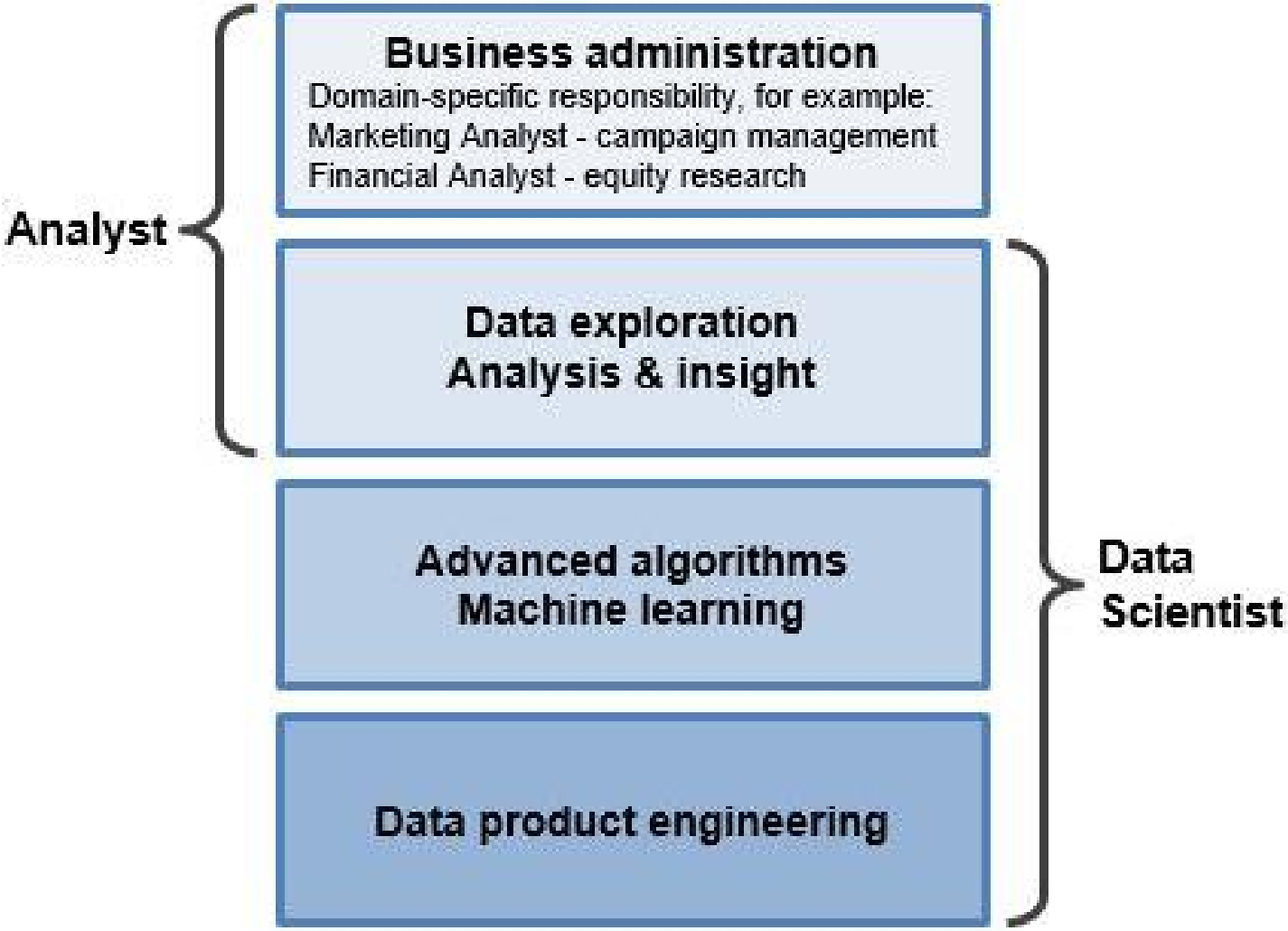
Prescriptive Analytics

- Set of techniques to indicate that best course of action
- It tells what decision to make optimize the outcome
- The goal of prescriptive Analytics is
- Quality improvement
- Service enhancement
- Cost reductions and
- Increasing productive

The Required Skill Set



Difference between Data Analyst and Data Scientist



Why Python?

Usability

- **Desktop and Web applications**
- **Database applications**
- **Networking applications**
- **Data Analysis**
- **Machine Learning**
- **IoT and AI applications**
- **Games**

Thank you