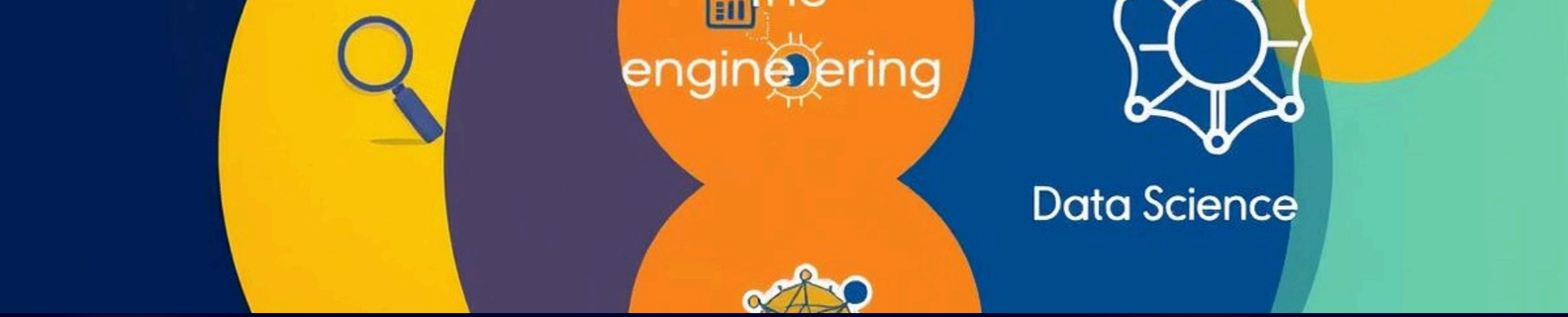
Data Analytics: Unlocking Insights from Data

Examining data to draw meaningful conclusions

Goal: Discover insights that inform smart decisions



Data Analytics vs. Data Engineering vs. Data Science

Data Analytics

Focus on trends, historical data, visualizations

Data Engineering

Build and maintain data pipelines and infrastructure

Data Science

Predictive modeling, machine learning algorithms

Data Lakes vs. Data Warehouses

Data Lake

Stores raw, unstructured data - variety and volume

Data Warehouse

Stores structured, processed data - reporting focused

Key Difference

Raw data in lakes vs. processed data in warehouses

Types of Data Analysis

Descriptive

What happened? Reports, dashboards

Diagnostic

Why did it happen? Root cause analysis

Predictive

What will happen? Forecasting, modeling

Prescriptive

How to make it happen? Optimization, recommendations

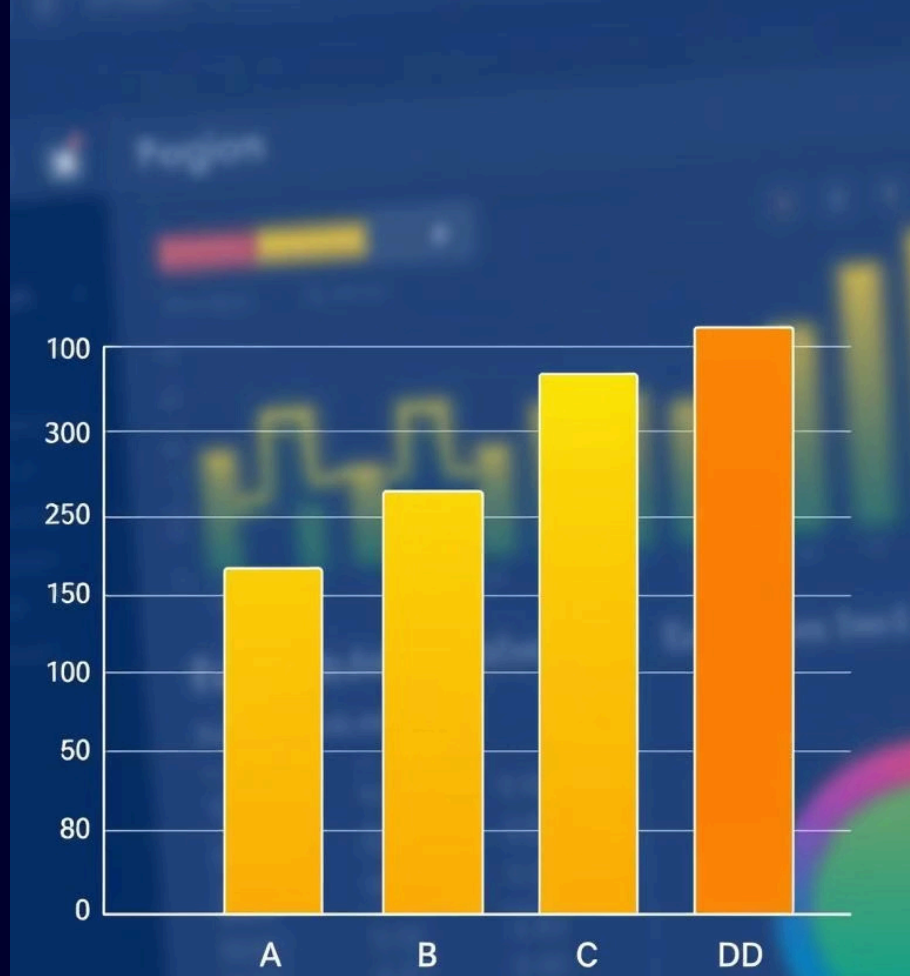
Descriptive Analysis: Understanding the Past

Summarizes past data

Identifies trends and patterns

Techniques

Data aggregation, data mining



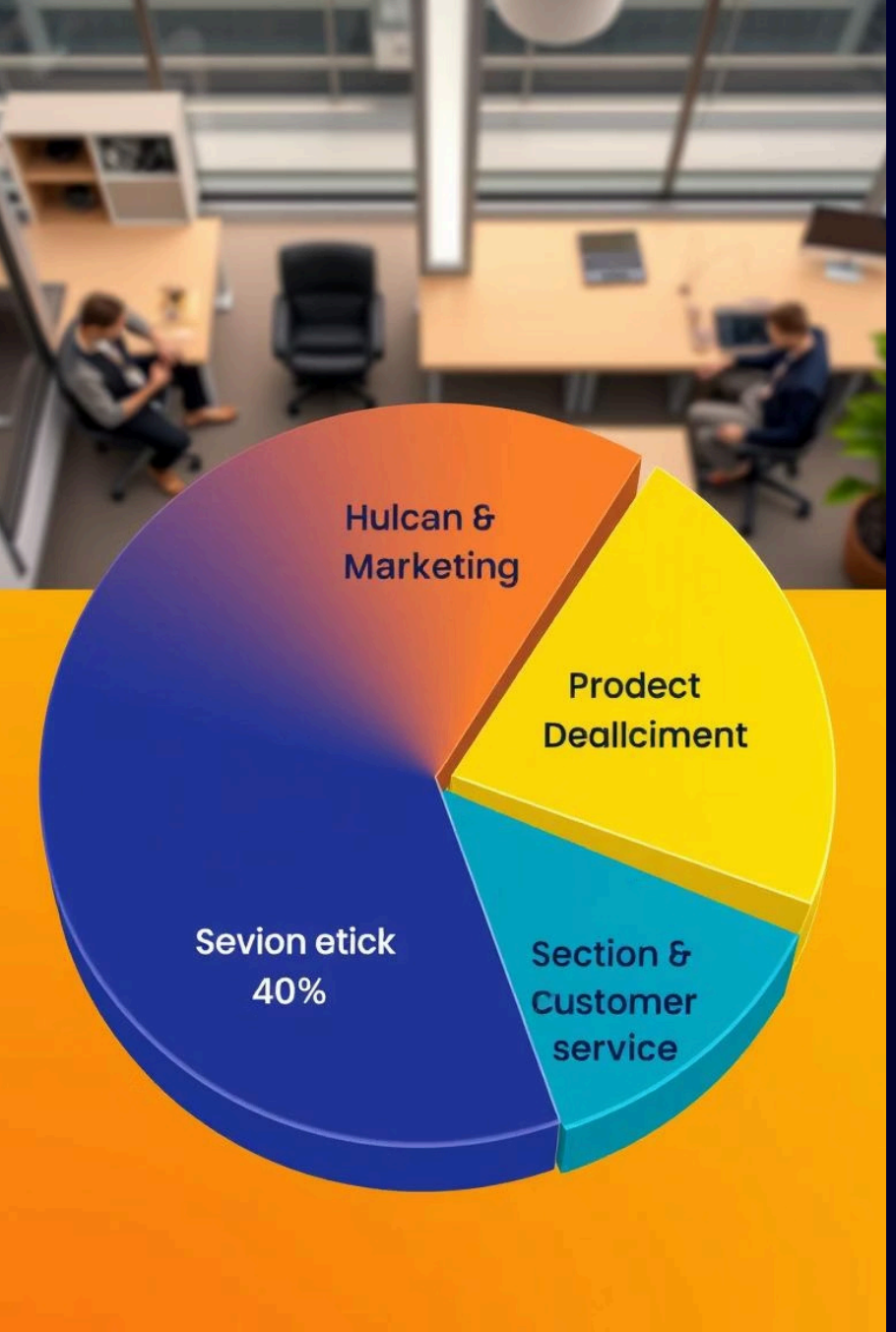
Diagnostic and Predictive Analysis

Diagnostic Analysis

Explores causes behind trends using various techniques and explorations

Predictive Analysis

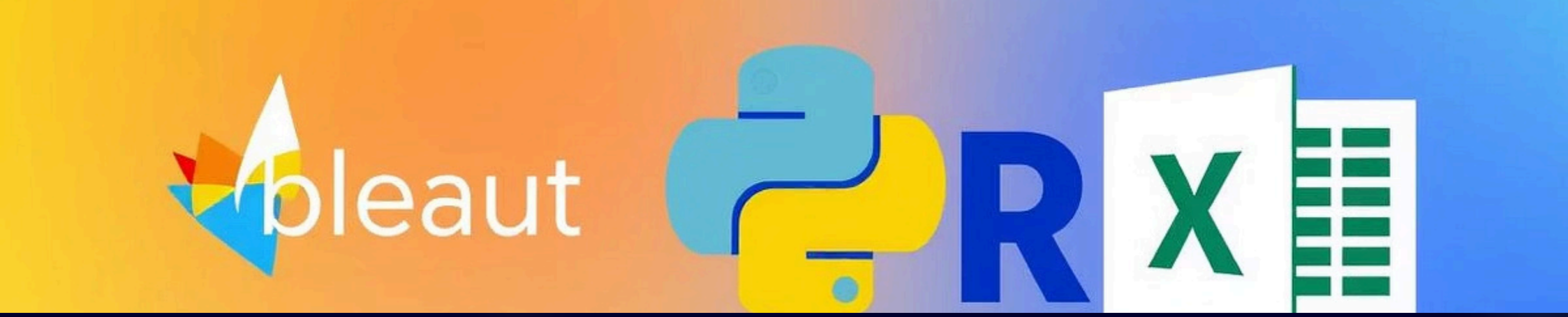
Forecasts future outcomes with machine learning techniques



Prescriptive Analytics: Optimizing Future Actions

Provides actionable recommendations for decision-making

- Simulation
- Optimization
- Decision trees



Data Analytics Tools

Excel

Basic analysis, widely accessible

SQL

Data Access using Queries

Python/R

Statistical analysis, machine learning

Tableau/Power BI

Easy visualizations and dashboards

Data Analysis Stages

1

Ideation

Define the problem and questions to answer.

2

Data Collection

Gather raw data from relevant sources.

3

Data Cleaning

Remove errors and inconsistencies for accuracy.

4

Exploratory Data Analysis

Discover patterns and summarize main characteristics.

5

Data Visualization

Create charts and graphs to illustrate insights.

6

Communicate Findings

Present results effectively to stakeholders.

Thank you

> ***Data is like humor — when you have to explain it, it's not that good.***