लघु उद्योग भारती

MSME
MICRO, SMALL & MEDIUM ENTERPRISES
सूक्ष्म, लघु एवं मध्यम उद्यम
OUR STRENGTH • हमारी शक्ति
Ministry of MSME, Govt. of India

Introduction to Data Science

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सत्यमेव जयते

MINISTRY OF MICRO, SMALL & MEDIUM ENTERPRISES

GOVERNMENT OF INDIA

Our Promise

- Life-Long Support (We Care)

Partner

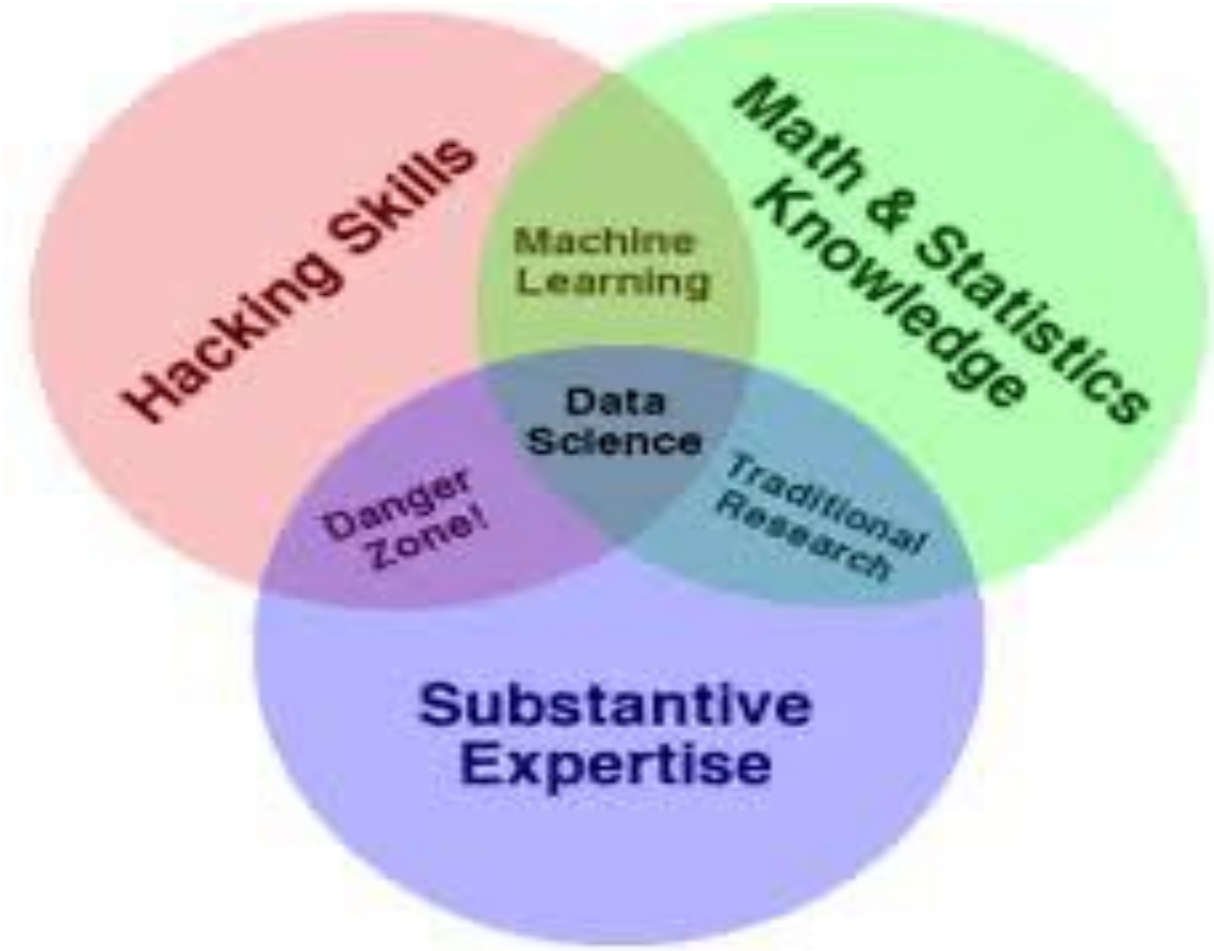
Dr. S Suresh Kumar

- A 49 year old versatile, accomplished, result oriented and passionate data scientist with proven years of over 26 years professional work experience working with Govt of India and Lead Organizations in delivering value added results. A Business-minded data scientist with a demonstrated ability to deliver valuable insights via data analytics and advanced data-driven methods. Relied on as a key adviser in driving global, multi-billion-dollar growth; gains in customer loyalty; and record-setting profit improvements

Schema

- Data Science – What ?
- Main Phases of Data Science project
- Introducing Big Data
- How to learn Data Science
- Example – Domain Knowledge Attainment
- Anaconda Navigator – Overview
- Traits of Data Scientist
- Data Engineering
- Applications of Data Science

Data Science - Definition



Understanding Better

Loosely Used Terms

- Data Analytics : Data analytics is the science of analyzing raw data in order to make conclusions about that information.
- Data Mining : Data mining is the process of discovering patterns in large data sets involving methods at the intersection of machine learning, statistics, and database systems
- Data Science : Data science is an inter-disciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from many structural and unstructured data.

Story Telling

8 Commandments of Story Telling with Data

1. Begin with a question ***(setup your story, what your audience is going to learn)***
2. End with an Insight ***(If you can't learn something useful from the data, the story isn't worth telling)***
3. Tell a compelling story ***(People remember stories, not data. Take them on your journey)***
4. Explain with Visuals, narrate with Words. ***(People understand metrics, trends and patterns better with visuals. Use words to add voice to the data)***

8 Commandments of Story Telling with Data

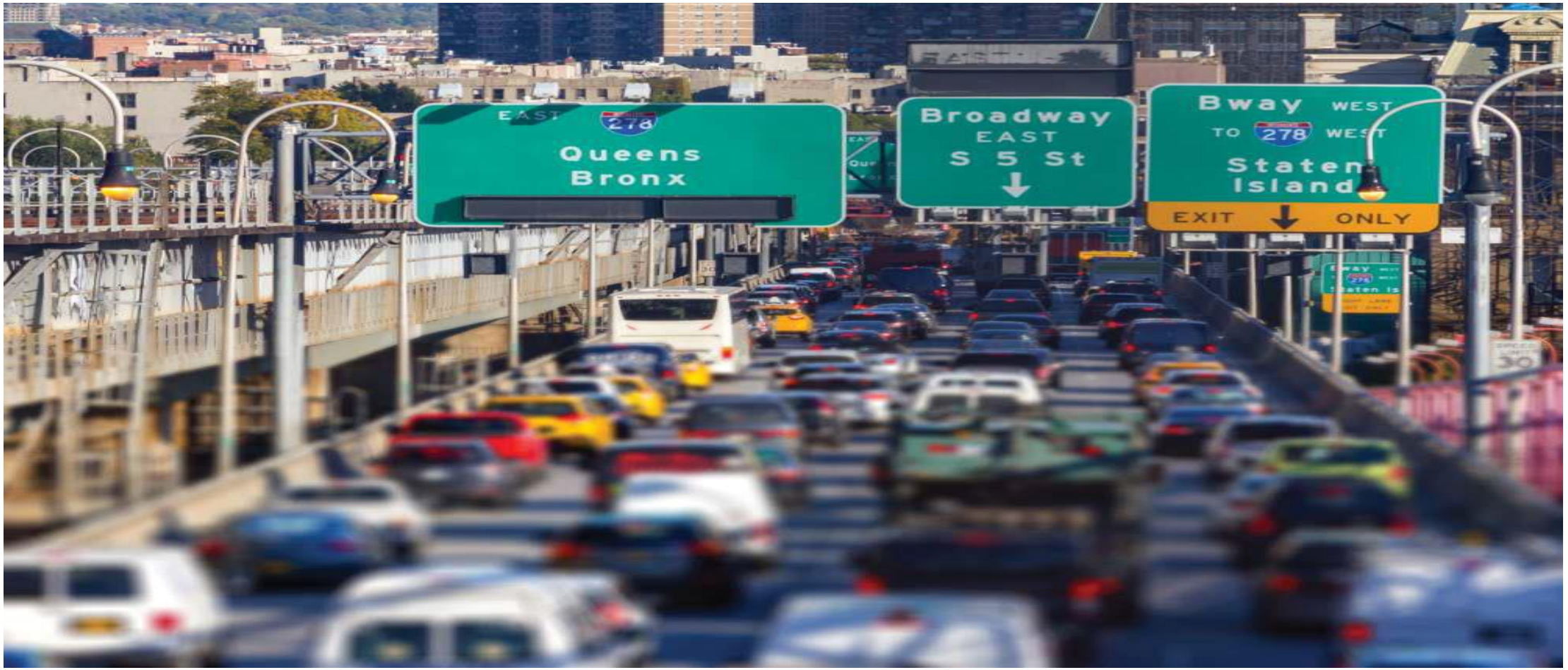
5. Be honest and credible (***The clients want value honesty. Don't sugarcoat the negatives)***

6. Be clear and concise. ***(Remove everything that is not part of your story. Save the good bits for another time)***

7. Know and Cater to your Audience. ***(What are their interests and goals. Do they want the details or just the high level summary)***

8. Provide Context. ***(Compare metrics over time to industry benchmarks. Numbers are meaningless without context)***

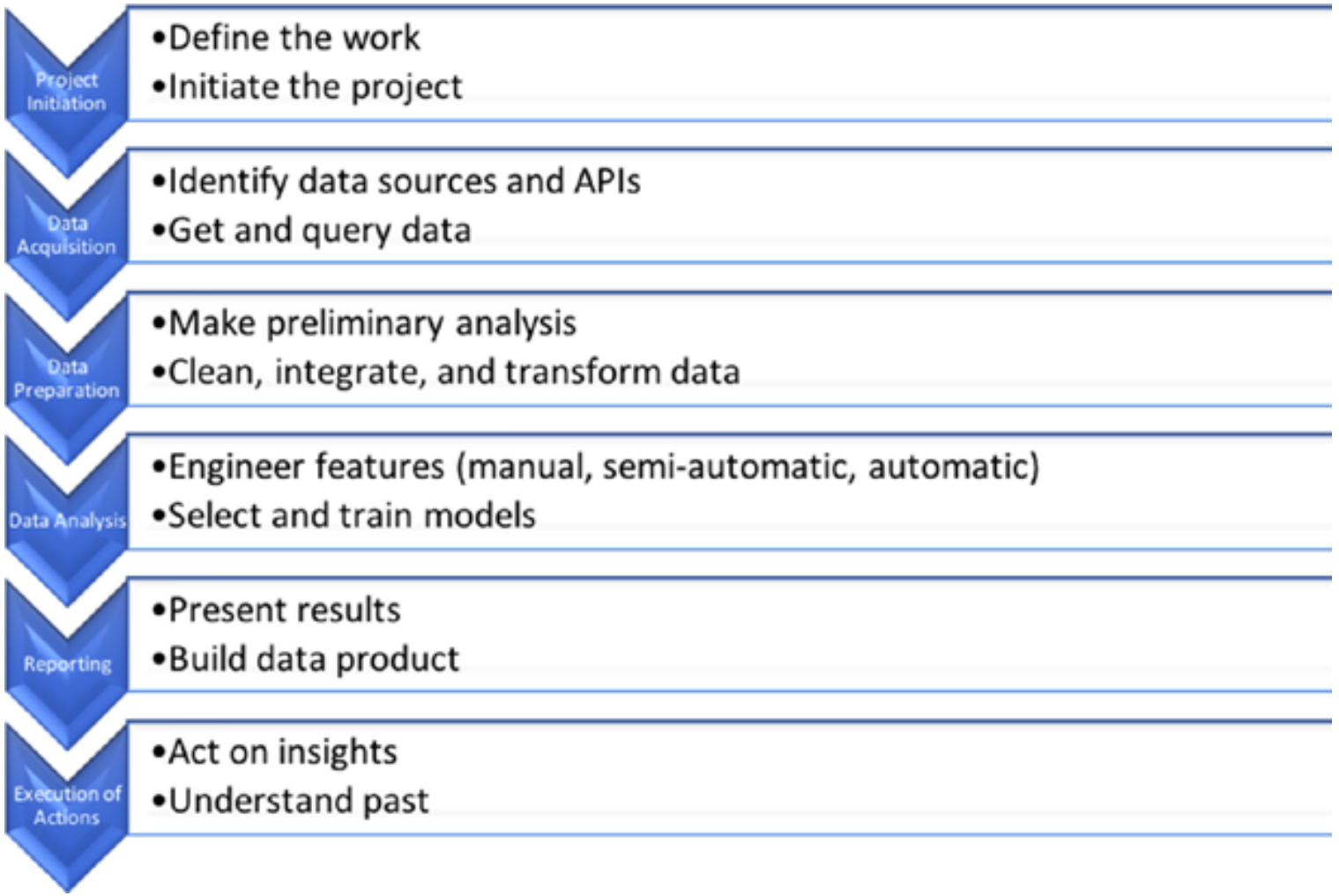
Where are your eyes drawn



Solution

- My eyes go to the sun, then to the car, and then back to the sun again.
- When I focus on the sun, I can see the car in my peripheral vision. If I shift my focus to the car, I can still see the bright sun out of the corner of my eye.
- In applying learnings to data visualization, we should be aware of the tension that is introduced when we emphasize multiple things simultaneously in a graph or on a slide.

Main Phases of Data Science Project



Main Phases of Data Science Project

Introducing Big Data

Introducing Big Data

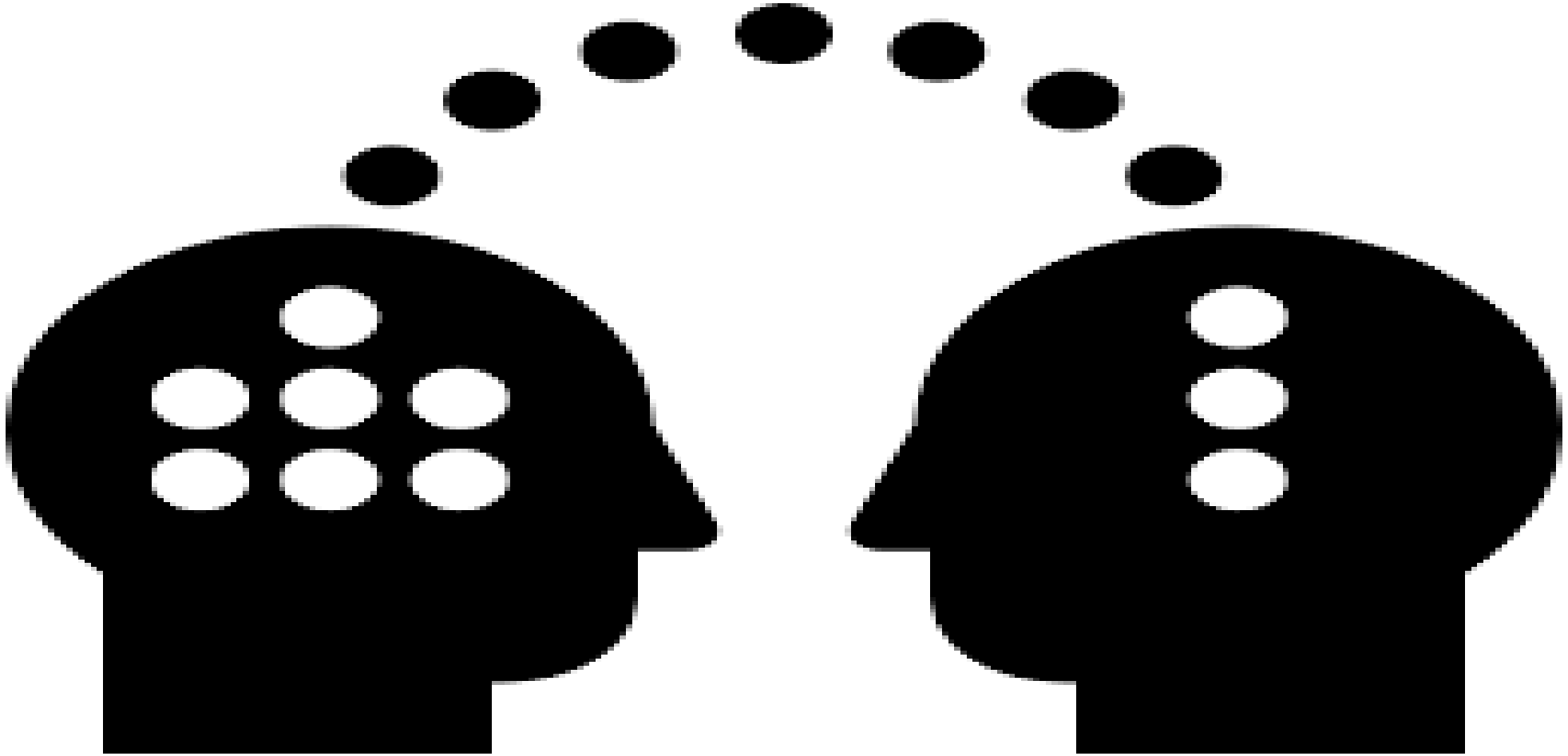
- 4V’s

Capitalizing on Big Data

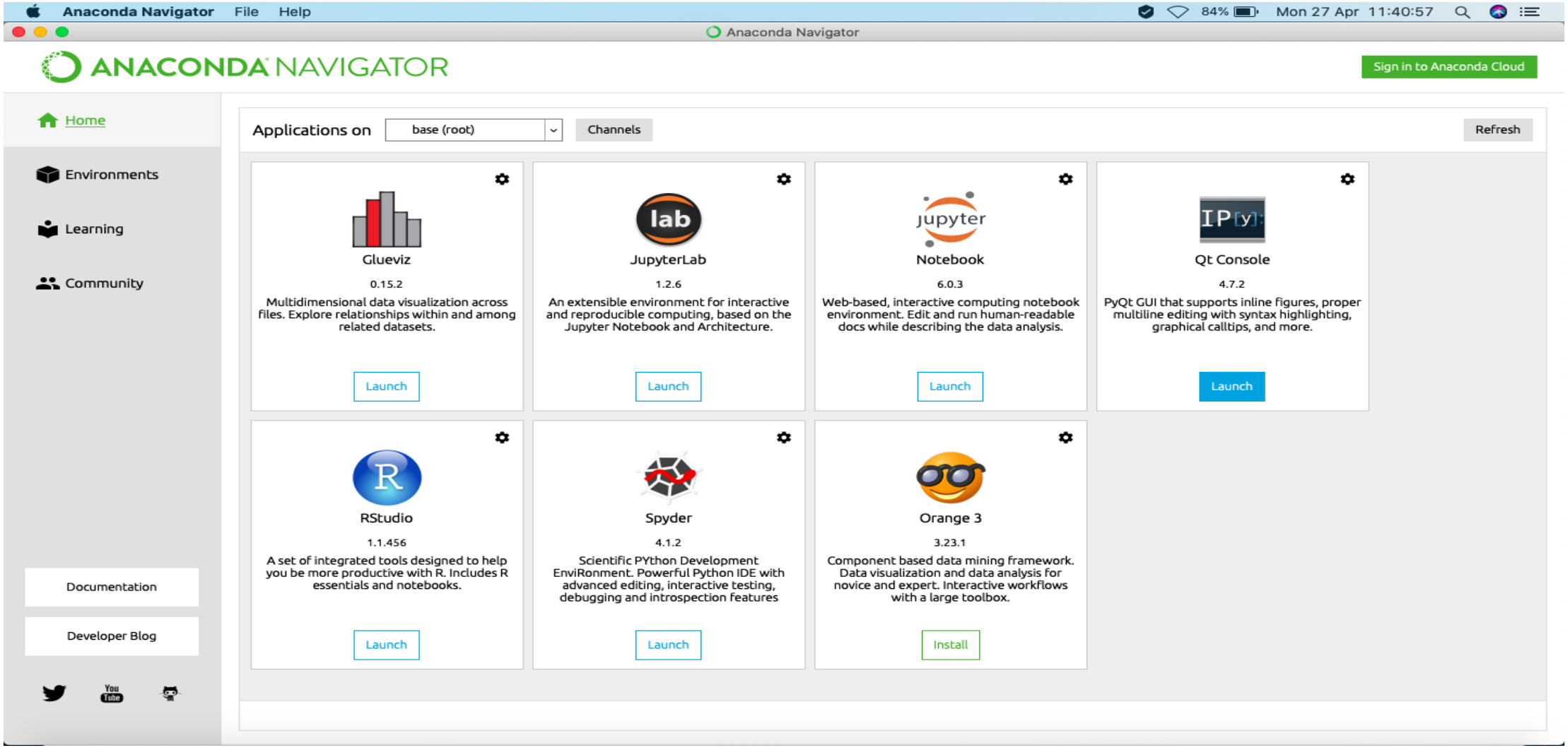
- The critical first step for manufacturers that want to use advanced analytics to improve yield is to consider how much data the company has at its disposal.
- Most companies collect vast troves of process data but typically use them only for tracking purposes, not as a basis for improving operations.
- For these players, the challenge is to invest in the systems and skill sets that will allow them to optimize their use of existing process information—for instance, centralizing or indexing data from multiple sources so they can be analyzed more easily.

How to learn and Implement Data Science

Example – Domain Knowledge Attainment



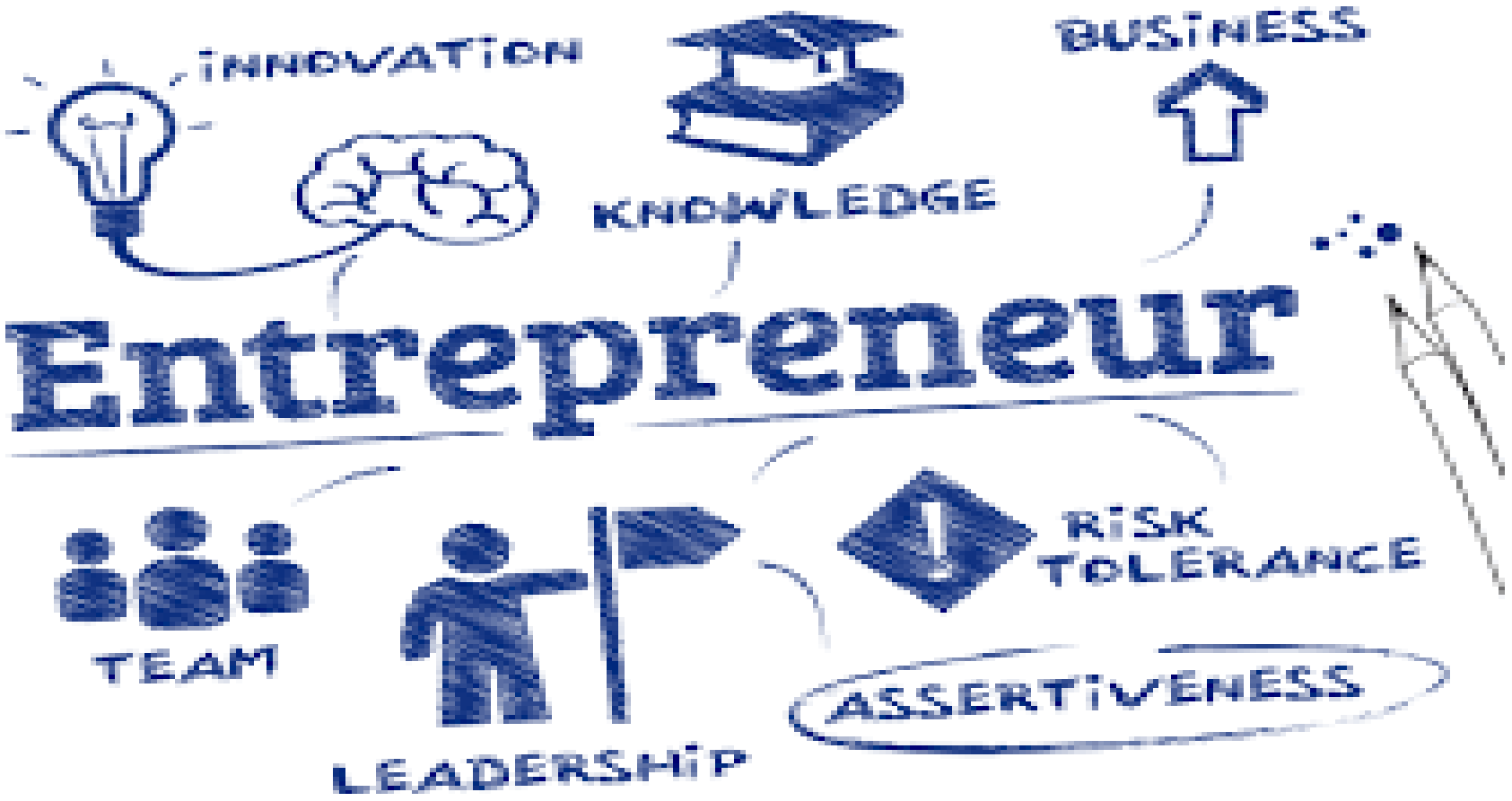
Anaconda Navigator – Overview



Traits of Data Scientist

Data Science – Practical Applications

Promote Entrepreneurship



Global Competence and Competitiveness in Manufacturing

- Predictive analytics is the analysis of present data to forecast and avoid problematic situations in advance.
- Manufacturers are deeply interested in monitoring the company functioning and its high performance.
- Finding the best possible way to hold problematic issues, overcoming difficulties or preventing them from happening at all are marvelous opportunities for the manufacturers using predictive analytics.
- The implementation of predictive analytics allows dealing with waste (overproduction, idle time, logistics, inventory, etc.).

Fault Prediction and Preventive Maintenance

- Accurate fault prediction
- JIT Spares
- No more of CBPM / PPM, but Cloud Based Analytical Maintenance

Demand Forecasting and Inventory Maintenance

- Demand forecasting is a complex process involving analysis of data and massive work of the accountants and specialists.
- Moreover, it appears to have strong relations with inventory management.
- Accurate demand forecasting and inventory maintenance

Price Optimisation

- Price optimization is the process of finding the best possible price both for manufacturer and customer, not too high and not to low.
- Modern price optimization solutions can increase your profit efficiently.
- These tools aggregate and analyze pricing and cost data both from the internal sources and those of your competitors and derive optimized price variants.

Product Development

- Big Data has brought big opportunities to manufacturing companies regarding product development.
- The manufacturers use the advantage of Big Data to understand their customers better, to meet the demand and to satisfy their needs.

Managing Supply Chain Risks

- Supply chains have always been complex and unpredictable.
- Risk has always been a part of the manufacturing processes and product delivery.
- With the help of analytics, the companies can predict potential delays and calculate probabilities of the problematic issues.
- The companies use analytics to identify backup suppliers and develop contingency plans.

Proposed Tools

- DS with Python, Julia
- TABLEAU
- PowerBI
- Big Data Analytics

Thank You