Winning Space Race with Data Science

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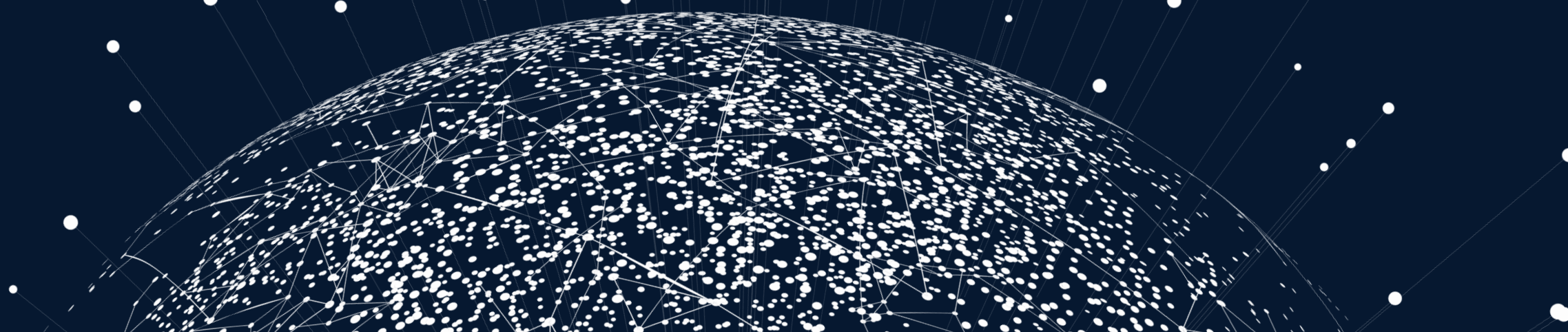


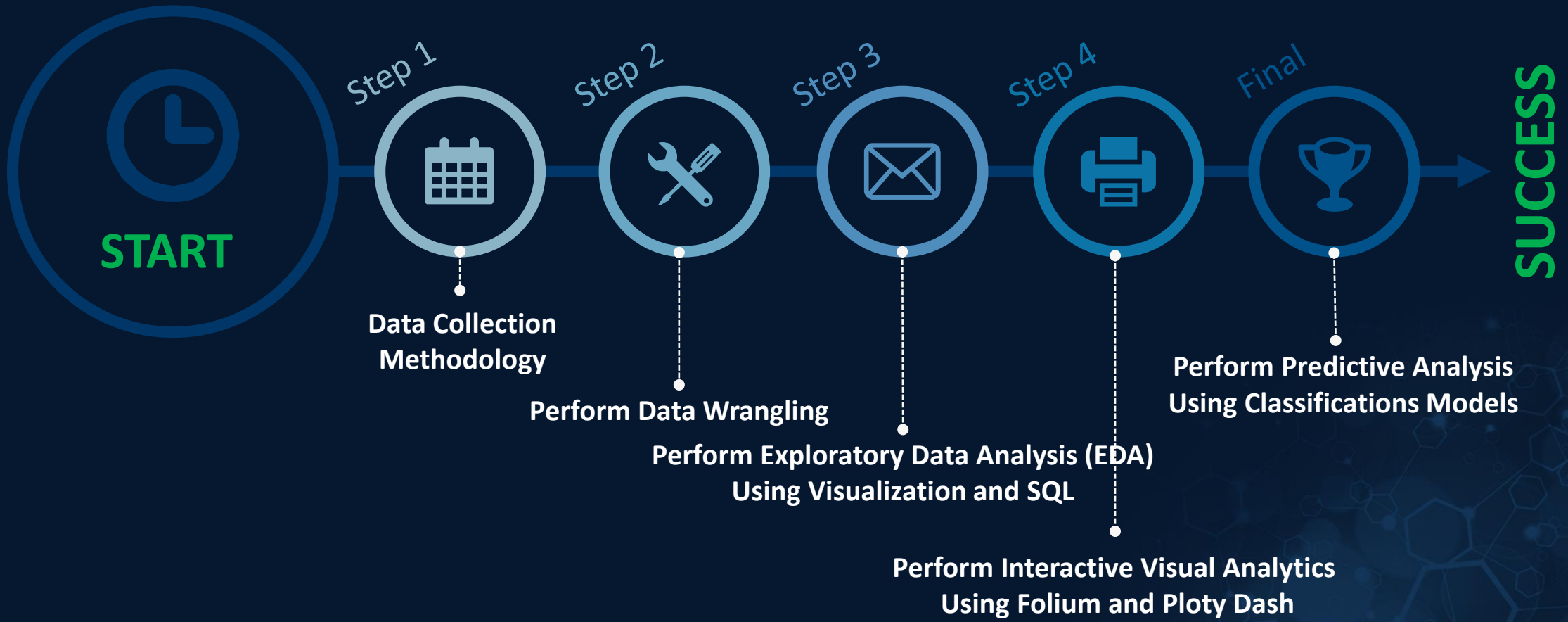
Objective

The project aimed to leverage advanced data science techniques to enhance our space agency's capabilities in satellite deployment, mission planning, and interstellar research, thereby securing a leading position in the global space race.

Approach

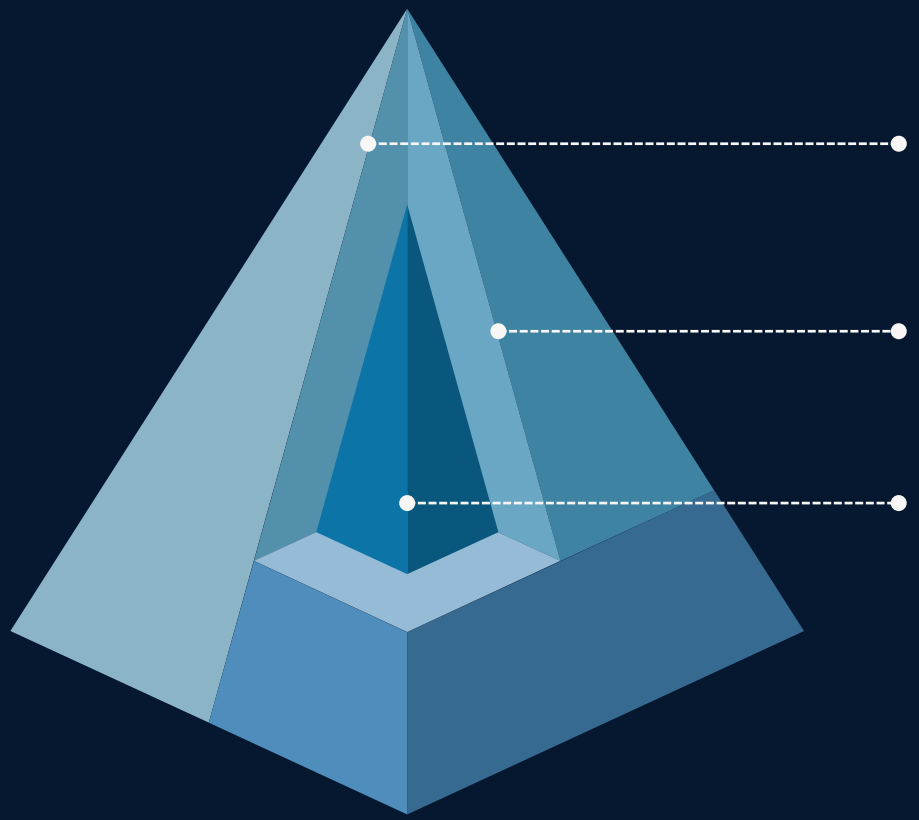
We integrated vast datasets from satellite telemetry, astronomical observations, and mission logs. The data was meticulously cleaned and structured to facilitate complex analyses.

Methodology Executive Summary



Data Collection

Methodology



Data Acquisition

We Gathered extensive dataset from various sources, including satellite telemetry, mission logs and astronomical observations

Data Wrangling

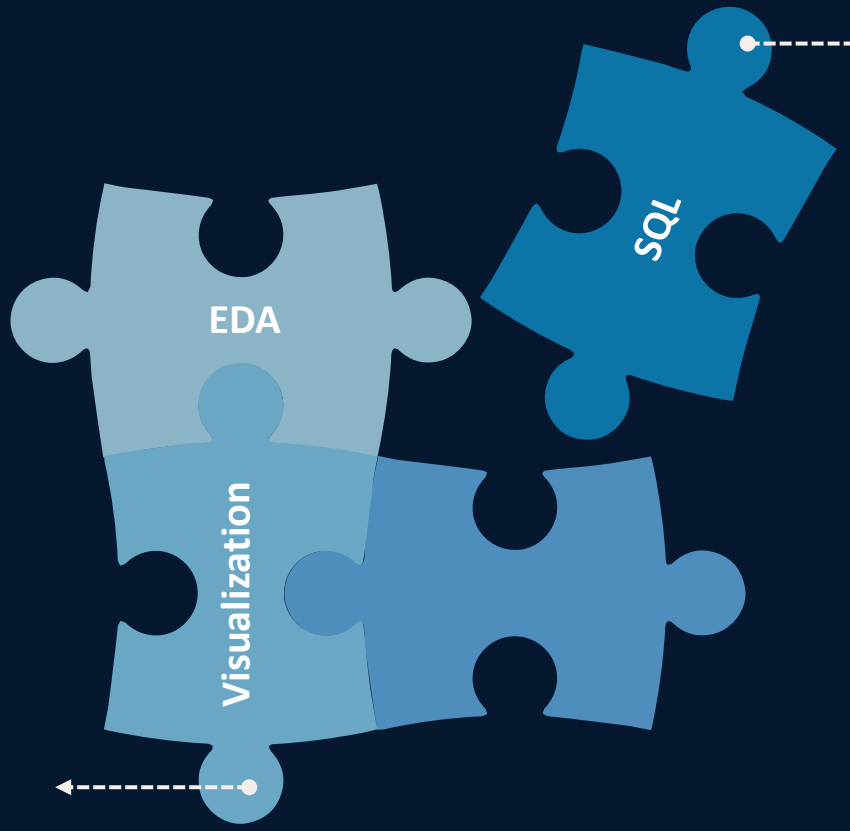
The Collected, data underwent rigorous cleaning, normalization, and transformation to ensure quality and consistency.

Data Processing

We structured the cleansed data into a fromat suitable for complex analyses and machine learning models.

Exploratory Data Analysis (EDA)

Utilizing both visualization tools and SQL queries, we conducted a thorough EDA to uncover underlying patterns and relationships in the data.



SQL Analysis

Complex SQL queries were executed to perform deep dives into specific data segments.

Visualization

We created a series of plots and graphs to visually interpret the data trends and distributions.

Methodology

Executive Summary

Data Collection Methodology

Perform Data Wrangling

Perform Exploratory Data Analysis (EDA) Using Visualization and SQL

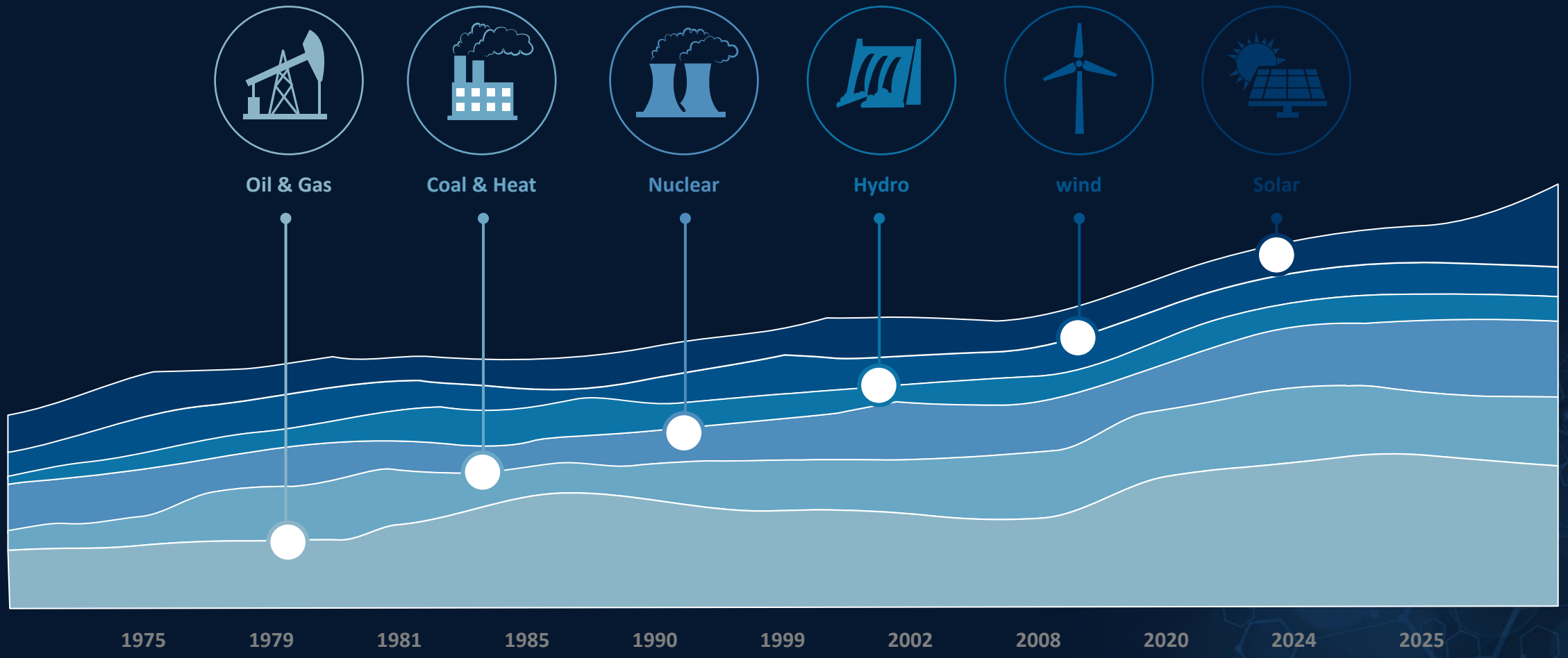
Perform Interactive Visual Analytics Using Folium and Ploty Dash

Perform Predictive Analysis Using Classifications Models

Agile Methodology

Interactive Visual Analytics:

We employed Folium for geospatial analysis and Plotly Dash for creating interactive dashboards, enabling dynamic data exploration and real-time insights.



Predictive Analysis

Classification Models

We developed and trained various classification models to predict system failures and optimize mission outcomes.

Model Tuning

We fine-tuned the models using hyperparameter optimization to achieve the best performance.

1st Step | **2nd Step** | **3rd Step** | **Final Step**

Model Building

The models were built using a systematic approach to feature selection and algorithm choice.

Model Evaluation

The models were rigorously evaluated using cross-validation and performance metrics to ensure their predictive power and reliability.

THANK YOU