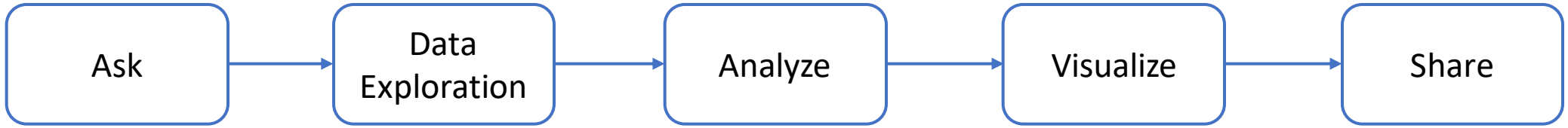
Job Market Analysis

- ## Analyzing Context

An employee recruiting firm, ***DataSearch***, needs to uncover job trends in data science and a fictitious collection of job postings are used as the analysis dataset.

- ## Analyzing Process

In this data analysis project, the following steps are employed to conduct the analysis process:



- ASK

In this step, we need to ask specific business questions that the analysis aims to answer and define the objectives and goals of the analysis to provide clear direction.

At first, it is important to understand what a recruiting firm does to help understand the context and goals of this job market analysis project. A recruiting firm is a company that seeks qualified candidates to fill open job positions.

Since data search has interest on the trends of job market in the area of data science, the goal of this analysis is to identify the development trend of data science job postings in the past years. This includes:

- Examine trends of job postings in data science over time: seasonality, cyclical patterns, and recurring trends.
- Explore the general trend direction: is the job postings increasing, decreasing or stable?
- Explore the relationships between the trends under analysis and other variables, such as required experience, salary, job position level, and job titles.

Data Exploration

In this step, we will explore the data fields and their meanings and we can attempt to group relevant data fields for further analysis. Additionally, we will check for duplicate entries and empty values in the dataset.

In Tableau, on the data source page, we obtain an overview of the dataset: 18 fields and 25114 records.
We can group the fields into several groups according the information they contain:

Company information	
Company Industry	The industry that a company belongs to
Company Name	The name of a comany
Company Size	Number of employees of a company

Pay information	
Pay Rate	With ‚hr' or ‚yr' to indicate if the job is paid per hours or years
Maximun pay	The maximum salary of a job position
Minimum Pay	The minimum salary of a job position

Job information	
Job Location	The location of a job, such as country, state, city
Job Position Level	Position level: ‚Associate', ‚Entry-Level', ‚Mid-Senior Level', ‚Intership', ‚Director', ‚Executive'
Job Position Type	Position type: ‚Contract' or ‚Full-Time'
Job Posting Date	Since when the job position is posted
Job Posting ID	Unique ID that identifies a job position
Job Skills	Description of the required skills for a job position
Job Titles	Short name of a job
Job Title Full	The full name of a job
Job Title Additional Info	Additional information about a job

Application information	
Number of Applicants	Total number of applicantions received for a posted job position
Years of Experience	The requiered average years of working experience for a job position

- ## Analyze

In this step, aligned with the analysis objectives and business questions, we analyze various elements in the dataset to identify job market trends in data science.

- ### Applicants and job postings

In order to investigate the supply and demand relationship in the job market, it is useful to examine how the number of job postings and applicants varies over time.

- ### Job postings vs. job titles

Since *DataSearch* is focused on the data science area, let's concentrate our analysis on job postings for roles such as data analyst, data engineer, data scientist, data science manager, and machine learning engineer. We will compare the number of job postings among these positions. A bubble chart is selected to show the analysis result.

- ### Job postings over time

To explore the overall data science job trend, we can examine the number of job postings over time in the entire dataset. As companies post jobs based on position levels, we can further categorize the postings according to position levels to observe the individual trend in each position level. A stacked area chart can describe the trend over time well.

- Salary Expectations

As a recruiting firm, understanding the general salary situation in relevant industries is crucial. Therefore, it would be beneficial to analyze the average payment based on experience in each job position. A line chart is selected to depict the relationship between salary and working experience in each job position.

- Experience Analysis

In job postings, the required work experience varies according to different position levels. Understanding how work experience varies within one position level and how it changes among different levels is essential. Statistical analysis can provide a better understanding of this aspect. Therefore, a box plot can offer a clear representation of these variations.

- Visualization

Based on the above analysis, we can already create a series of visualizations. Ultimately, these visualizations can be structured into an interactive dashboard, and the application of suitable filters will allow the audience to investigate the discovered insights more effectively.