

Project Design Phase-II

Technology Stack (Architecture & Stack)

Date	03 July 2025
Team ID	LTVIP2025TMID50344
Project Name	Cosmetic Insights : Navigating Cosmetics Trends and Consumer Insights with Tableau
Maximum Marks	4 Marks

Technical Architecture:

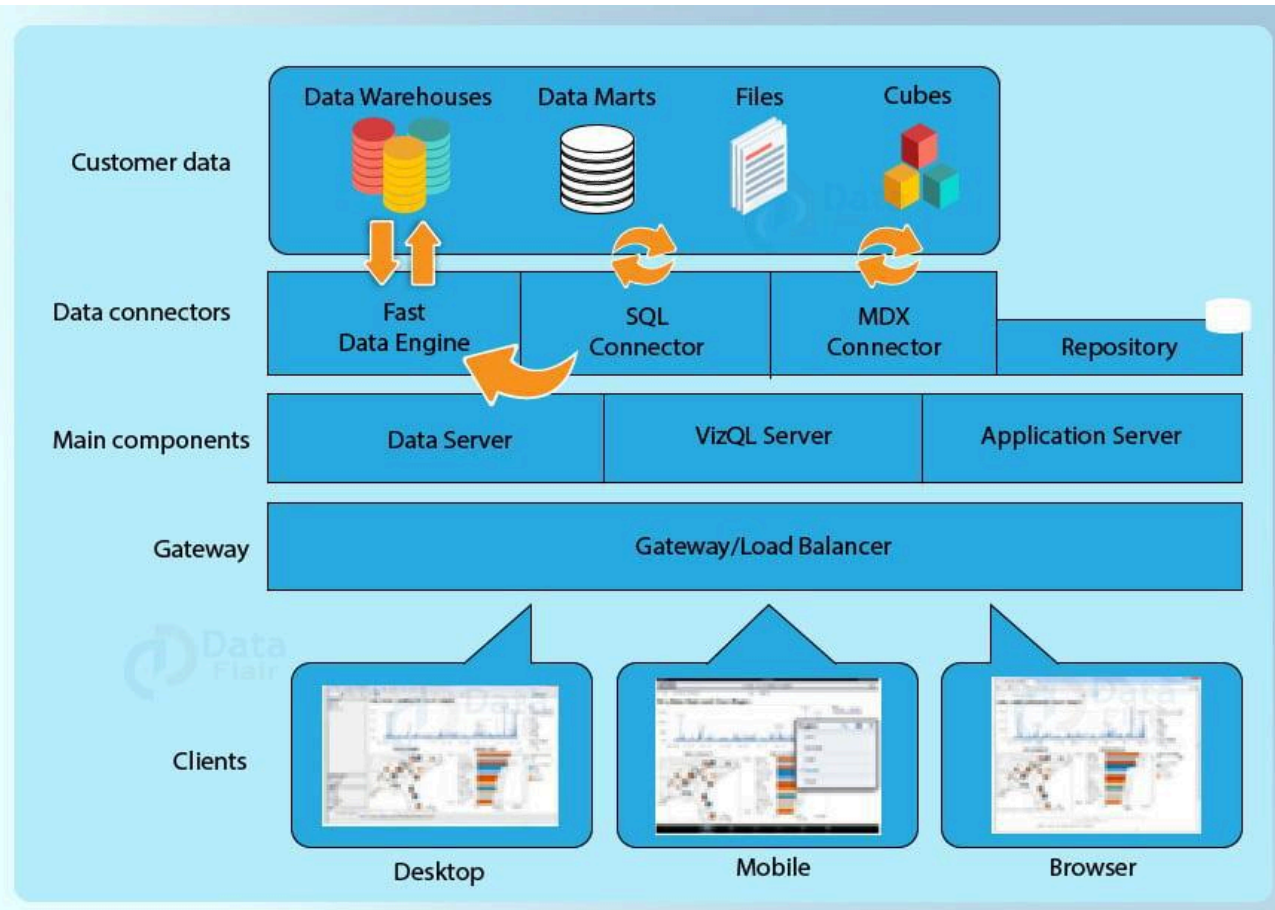
This project leverages a data visualization and analytics pipeline to process cosmetic product and consumer data and generate interactive Tableau dashboards. The system is designed to ensure usability, accessibility, and clarity for business stakeholders such as marketing analysts, product managers, and executives in the cosmetics industry.

Architecture Overview:

1. Data Ingestion (CSV Dataset)
2. Data Cleaning & Feature Engineering (Python, Pandas)
3. Data Export for Tableau (Preprocessed CSV)
4. Dashboard Development (Tableau Desktop)
5. Dashboard Hosting (Tableau Public)
6. Report Export (Screenshots / PDF)
7. Link Sharing (Tableau Public URLs)



Tableau Architecture



Technical Architecture

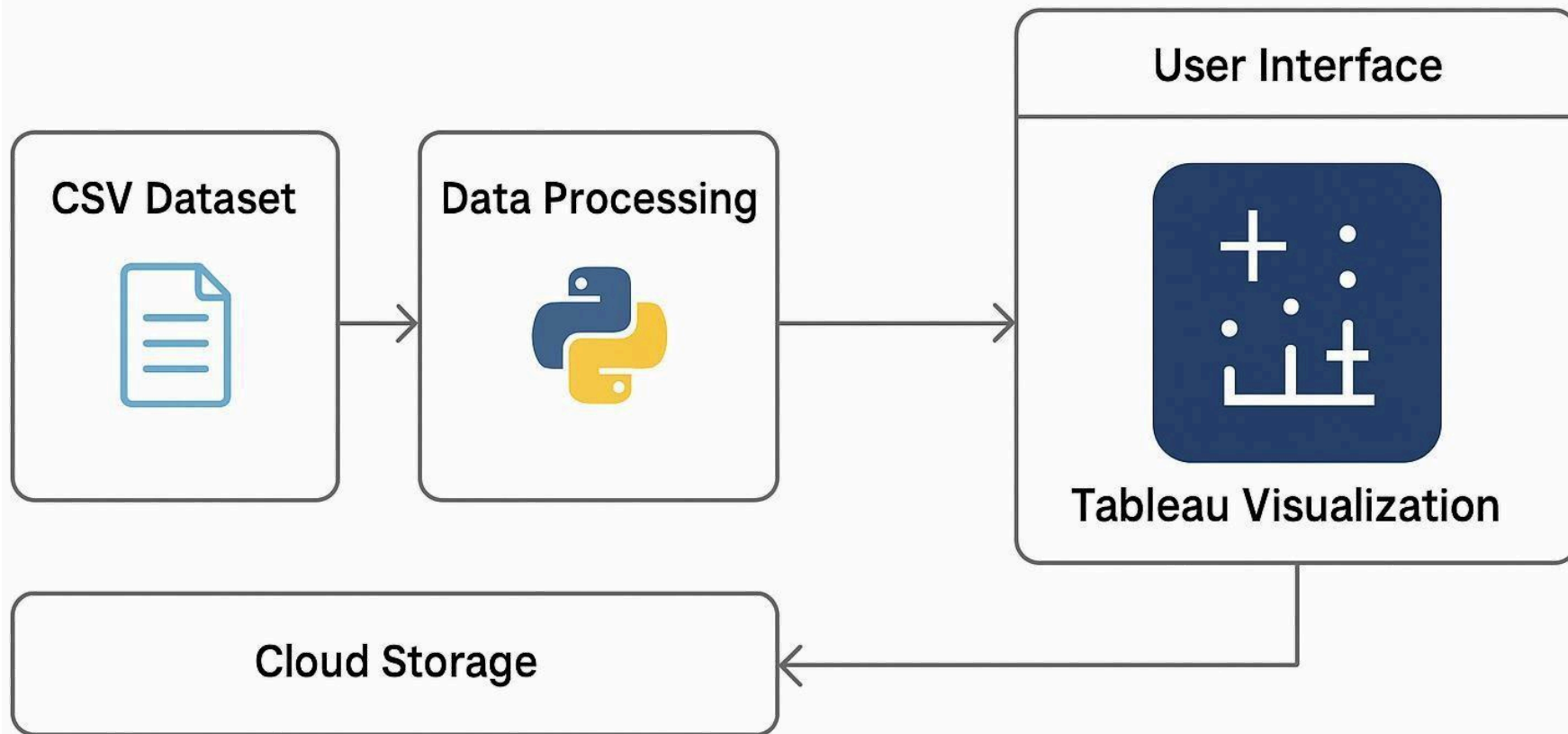


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	User views and interacts with dashboards	Tableau Public Dashboard (Web UI)
2.	Application Logic-1	Data ingestion and validation logic	Python, Pandas
3.	Application Logic-2	Data preprocessing and transformation logic Feature engineering (e.g. categorize age groups, product categories)	Python, Pandas
4.	Application Logic-3	Data export and reshaping for Tableau consumption	Python
5.	Database	Temporary storage of cleaned cosmetics data	Local CSV file (flat-file based)
6.	Cloud Database	Not applicable (handled locally)	–
7.	File Storage	Storage of datasets, images, report screenshots	Local File System / Google Drive
8.	External API-1	N/A	–
9.	External API-2	N/A	–
10.	Machine Learning Model	Not required (descriptive/visual analysis only)	–
11.	Infrastructure (Server / Cloud)	Tableau Public cloud hosting of dashboards and local data processing	Tableau Public, Local Python Environmen

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Python (Pandas, NumPy), Tableau Public
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	SHA-256 for hashing, CSV anonymization, IAM
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	3 -Tier Architecture (Data Layer, Logic, UI)
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Tableau Public Cloud Hosting
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Local caching, Preprocessed CSVs for Tableau

References:

<https://c4model.com/>

<https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/>

<https://www.ibm.com/cloud/architecture>

<https://aws.amazon.com/architecture>

<https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d>

<https://public.tableau.com/>