Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	18 June 2025
Team ID	LTVIP2025TMID59142
Project Name	Visualizing Housing Market Trends: An Analysis of Sale Prices and Features using Tableau
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2
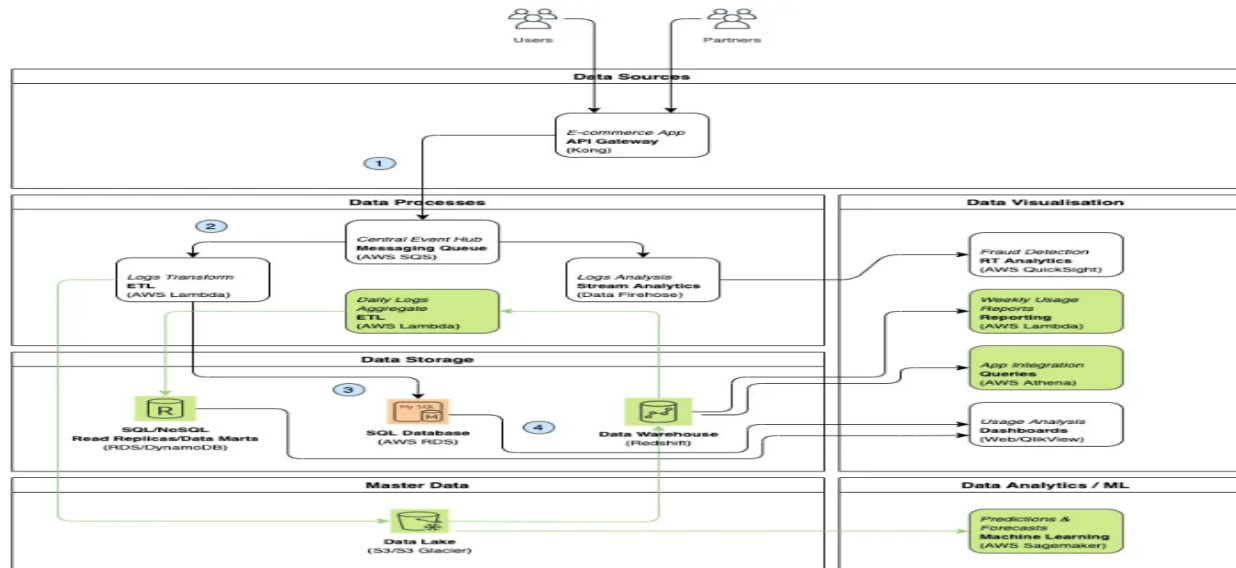
Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web-based dashboard to explore housing trends	React.js, Tailwind CSS
2.	Application Logic-1	Data ingestion, transformation logic	Python (with Pandas, boto3), AWS Glue
3.	Application Logic-2	ML training and prediction for pricing trends	Amazon SageMaker (XG Boost /Linear Reg)
4.	Application Logic-3	User alert logic (e.g. threshold breach notification)	AWS Lambda + SNS
5.	Database	Store cleaned and structured housing data	PostgreSQL (Amazon RDS)
6.	Cloud Database	Cloud-managed scalable database	Amazon DynamoDB
7.	File Storage	Store raw data files (CSV, JSON)	Amazon S3
8.	External API-1	Import property listing data	Zillow/Redfin APIs
9.	External API-2	Geolocation services for mapping	Google Maps API
10	Machine Learning Model	Predict property prices based on time and features	Regression Model (SageMaker hosted)
11	Infrastructure (Server / Cloud)	Cloud deployment environment	AWS EC2, Lambda, S3, RDS, SageMaker

Table-2: Application Characteristics:

S. No	Characteristics	Description	Technology
1	Open-Source Frameworks	Frontend and ML libraries	React.js, Scikit-learn, Pandas
2	Security Implementations	Authentication, encryption, access control	IAM Roles, KMS Encryption, HTTPS
3	Scalable Architecture	Designed as microservices for ingestion, ML, and visualization	AWS Lambda, SageMaker endpoints
4	Availability	High availability through managed cloud services and replication	AWS Multi-AZ RDS, Auto Scaling
5	Performance	Use of caching, efficient queries, asynchronous alerts	CloudFront CDN, PostgreSQL Indexing