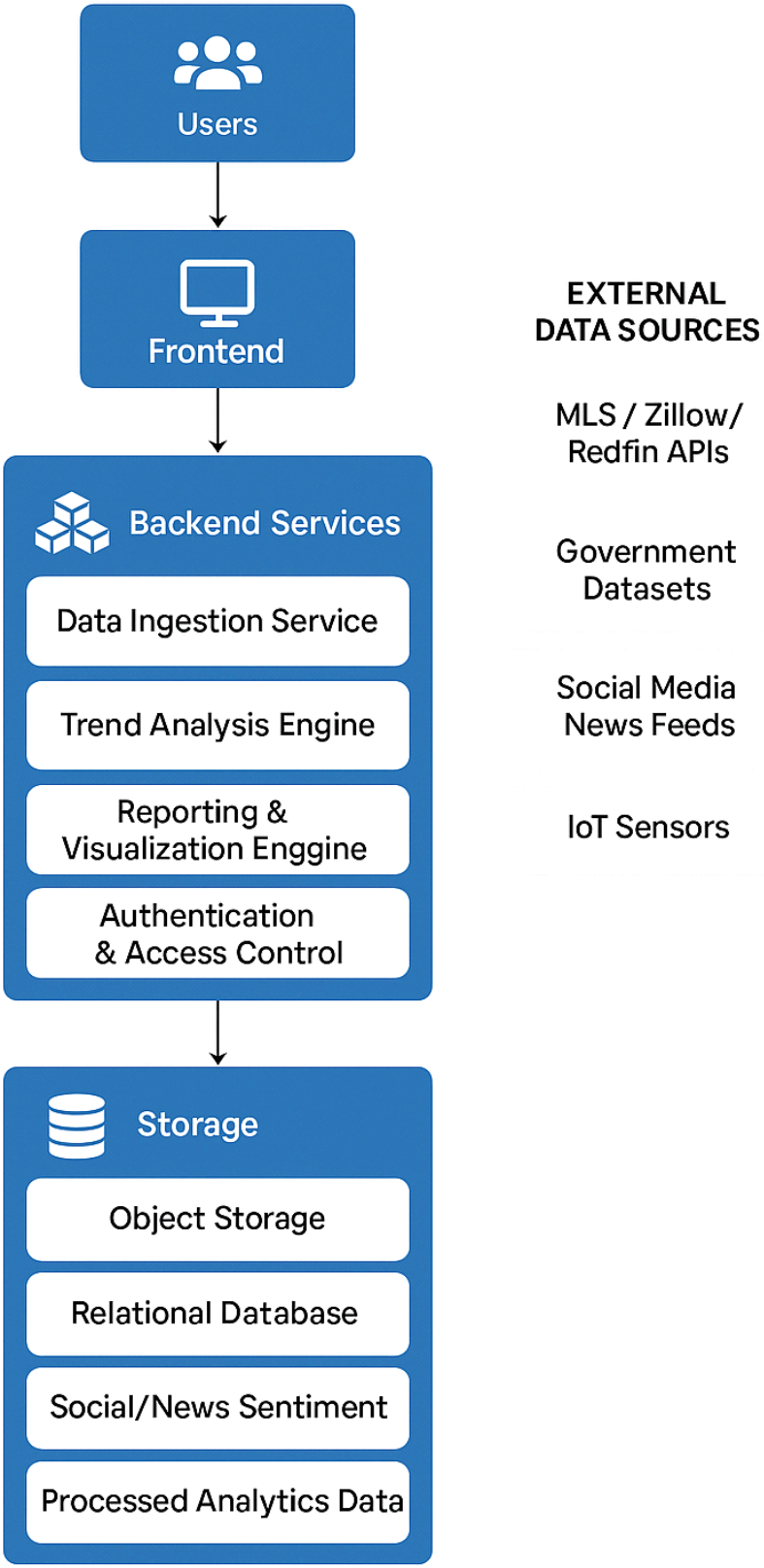
Project Design Phase
Solution Architecture

Date	15 February 2025
Team ID	LTVIP2025TMID50177
Project Name	Visualizing Housing Market Trends:An Analysis Of Sales prices And Features Using Tableau
Maximum Marks	4 Marks

Solution Architecture:


Users
Frontend
Backend Services
Data Ingestion Service
Trend Analysis Engine
Reporting &
Visualization Enggine
Authentication
& Access Control
Storage
Object Storage
Relational Database
Social/News Sentiment
Processed Analytics Data
EXTERNAL
DATA SOURCES
MLS / Zillow/
Redfin APIs
Government
Datasets
Social Media
News Feeds
IoT Sensors

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🏠 1. Users

Who: Analysts, real estate buyers, agents, and researchers.

What they do: Interact with the system via a dashboard or web app to view house trend analytics.

🖥️ 2. Frontend

Technology: Web dashboard built using tools like React, Tableau, or Power BI.

Purpose: Provides interactive charts, filters, maps, and reports to visualize house trends, price forecasts, location insights, etc.

 3. Backend Services

These core services process, analyze, and serve data:

Data Ingestion Service: Collects housing data from APIs (like Zillow), CSV files, or government sources.

Trend Analysis Engine: Applies statistical and ML models to identify pricing patterns, demand trends, and area growth.

Reporting & Visualization Engine: Generates graphs and summaries for frontend dashboards.

Authentication & Access Control: Secures user access to sensitive data and analytics features.

🗃️ 4. Storage Layer

Stores raw and processed data used for analysis:

Object Storage: Holds raw files like CSVs, API dumps, and model outputs (e.g., AWS S3).

Relational Database: Stores structured data like sales records, location info (e.g., PostgreSQL).

Sentiment Data: Optional storage for news/social media sentiment if included.

Processed Data: Cleansed and aggregated data for visualization and trend modeling.

🌐 5. External Data Sources

Real Estate APIs: Zillow, Redfin, MLS for listings and price data.

Government Datasets: Demographics, land use, crime stats, etc.

Social Media/News Feeds: For gauging market sentiment.

IoT Sensors: Optional, for smart home data like energy use, temperature trends.

✅ Purpose of Architecture

Enables scalable and automated collection and analysis of house trend data.

Supports real-time insights and historical comparisons.

Can be extended with machine learning models for price prediction and investment scoring.