Project Design Phase
Solution Architecture

Date	15 February 2025
Team ID	LTVIP2025TMID36498
Project Name	TrafficTelligence: Advanced Traffic Volume Estimation with Machine Learning
Maximum Marks	4 Marks

Solution Architecture – TrafficTelligence

Solution Architecture Description

TrafficTelligence is designed to estimate and predict traffic volume using machine learning algorithms applied to diverse data sources.
It enhances real-time traffic control, long-term urban planning, and commuter navigation systems by leveraging predictive insights.

Key Components

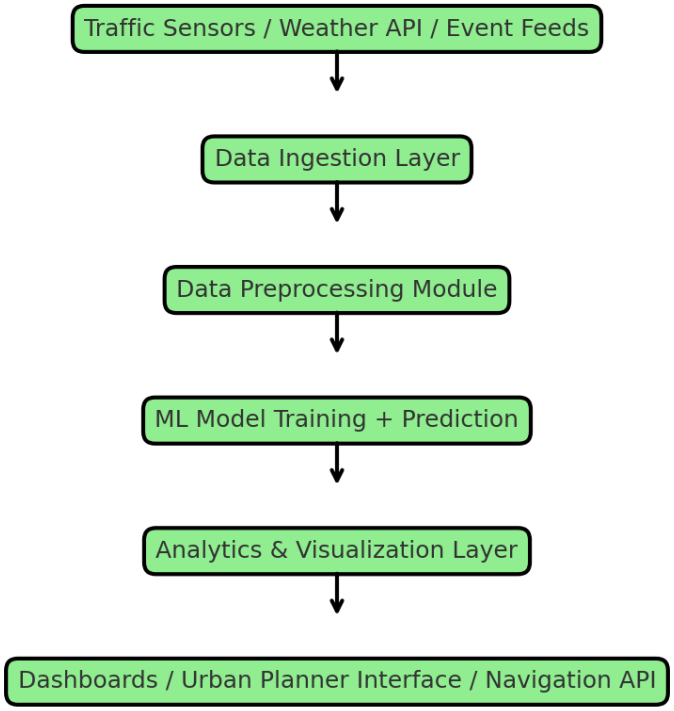
Component	Function
Data Ingestion Layer	**Collects historical traffic, real-time GPS, weather, and event data.**
Data Preprocessing Module	**Cleans, normalizes, and prepares data for modeling.**
Machine Learning Model Engine	**Trains models to predict traffic volumes.**
Prediction & Analytics Layer	**Provides forecasts and visual insights.**
Application Interface	**Dashboards and APIs for authorities, planners, and commuters.**
Decision Support System	**Suggests traffic signal adjustments, planning, and routing actions.**

Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.

Example - Solution Architecture Diagram:



Example - Solution Architecture Diagram

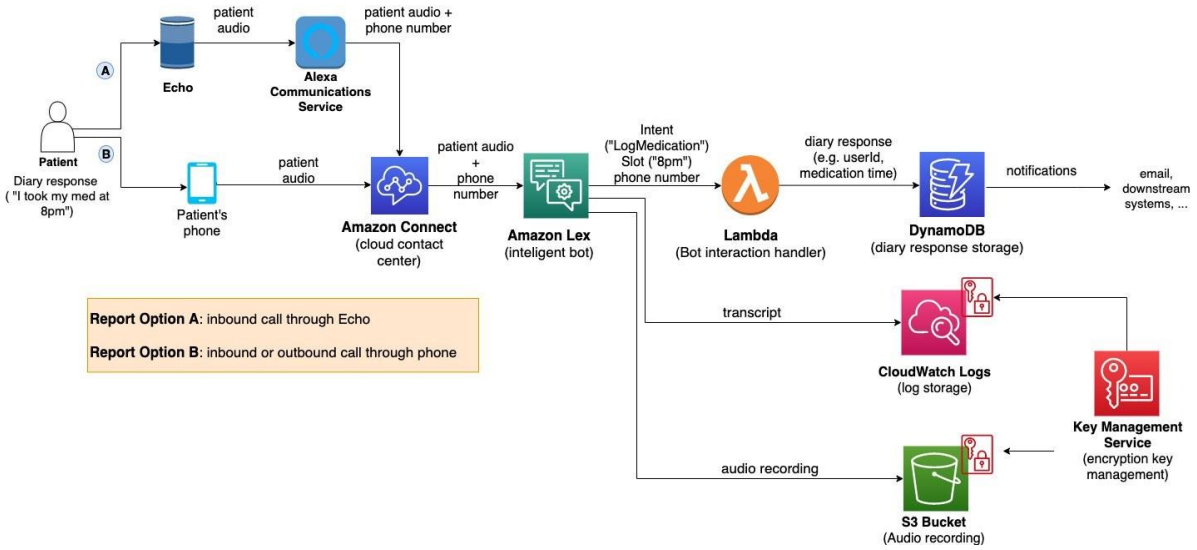


Figure 1: Architecture and data flow of the voice patient diary sample application

Reference: https://aws.amazon.com/blogs/industries/voice-applications-in-clinical-research-powered-by-ai-on-aws-part-1-architecture-and-design-considerations/