PROBLEM STATEMENT — MODEL 1

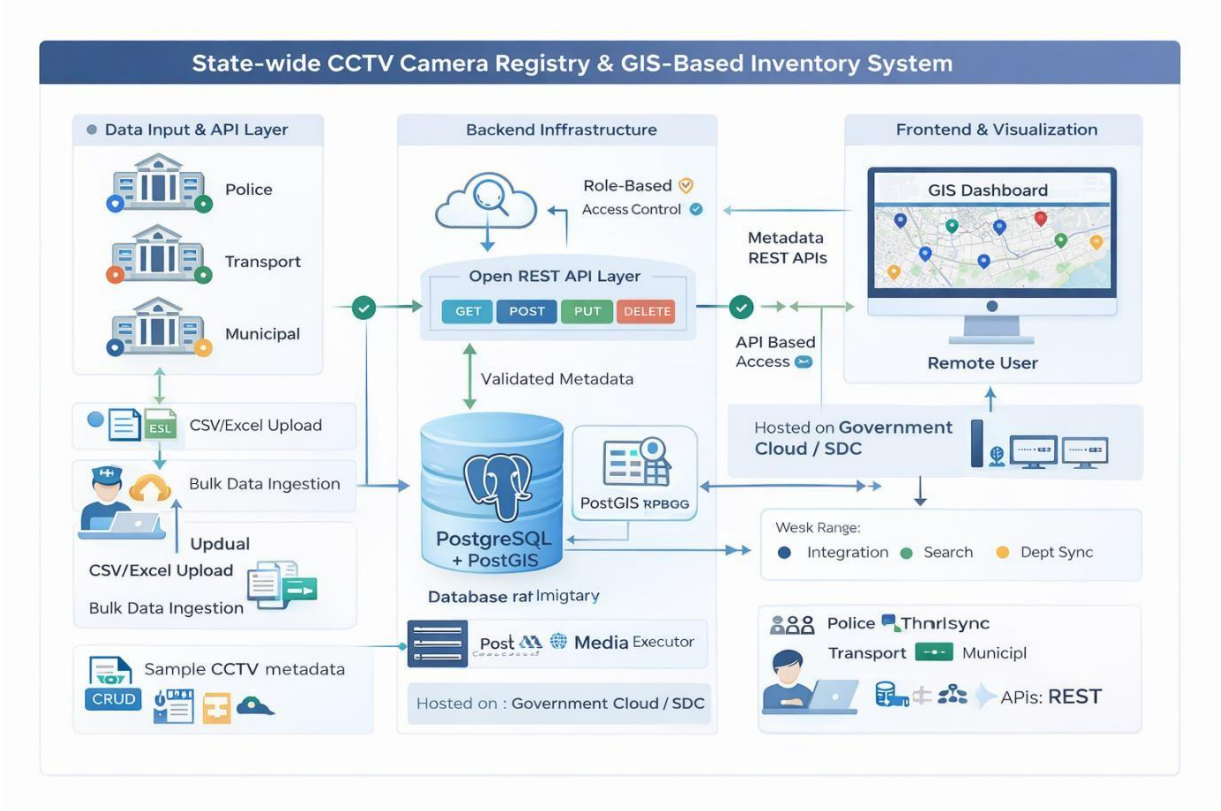

Fig 1

Tech Stack is illustrative, any open source may be used.

📌 Problem ID

- GOG-CCTV-01

📌 Problem Title

- Development of a State-wide CCTV Camera Registry and GIS-Based Inventory System

📌 Theme

- Smart Governance

📌 Category

- Software

📌 Organization / Ministry

- Government of Gujarat – Home Department

📌 Industry Type

- Government Department

📌 Domain Tags

- CCTV, GIS Mapping, Asset Registry, Smart City, Public Safety, Data Management

📌 Problem Statement (Description)

- Across the state, multiple departments such as Municipal Corporations, Transport Departments, Police, and various institutions have deployed CCTV cameras independently. However, there is currently no centralized mechanism to systematically identify, map, and manage these assets. This fragmentation results in limited visibility of the overall CCTV infrastructure and the absence of a unified GIS-based representation of camera locations.

  The lack of consolidation creates challenges in planning integration architecture and identifying monitoring gaps or redundancies. To address these issues, there is a need to develop a centralized CCTV registry system that captures metadata (without video streaming) and serves as a foundational layer for future integration, analytics, and decision-making.

📌 Problem Statement (Short Abstract)

- Develop a centralized platform to register, manage, and visualize CCTV camera metadata across departments using GIS mapping, enabling unified visibility and planning for smart infrastructure.

📌 Objectives

- Create a unified CCTV inventory across departments
- Enable GIS-based visualization of camera locations
- Standardize metadata formats
- Provide APIs for future integration

📌 Expected Solution / Deliverables

Participants should develop:

- Centralized CCTV metadata registry system
- GIS-based interactive dashboard
- Data management module (add/update/bulk upload)
- Open API layer for integration
- Role-based access control system

📌 Dataset / Inputs

- Sample CCTV metadata (synthetic/open datasets)

- GIS base maps
- Network/connectivity details (simulated)

📌 Constraints

- No video streaming or storage required
- Must support large-scale deployment
- Should follow open standards and interoperability
- Ensure data accuracy and validation

📌 Success Criteria

- Accurate and scalable CCTV registry
- Effective GIS visualization
- Easy on boarding of multiple departments
- Availability of APIs for future systems

📌 Expected Outcome

- Single source of truth for CCTV infrastructure
- Improved planning and decision-making
- Foundation for advanced CCTV integration models

📌 Suggested Technology Stack (Open Source Only)

- Frontend: React.js / Vue.js
- Backend: Python (Django/Flask) / Node.js
- Database: PostgreSQL + PostGIS
- GIS: Leaflet / OpenLayers
- APIs: REST
- Any other open-source technologies may also be used

📌 Use Case Scenarios

- State authorities mapping CCTV coverage
- Departments managing camera inventory
- Planning monitoring expansion

📌 Adoption / Deployment Readiness

- Deployable on State Data Center / Govt Cloud
- Scalable for statewide rollout
- Extendable for integration with AI and VMS systems

📌 Difficulty Level

- Medium

📌 Impact

- Strengthens monitoring planning
- Enables data-driven governance
- Serves as a foundational layer for smart city initiatives

SCORING RUBRIC — MODEL 1 (Out of 100 Marks)

Evaluation Criteria	Marks	Description / Justification
Data Accuracy & Registry Completeness	25	As this model is fundamentally a registry system, accuracy, completeness, and validation of CCTV metadata are critical to ensure reliability and usability as a single source of truth.
GIS Visualization & Usability	20	GIS mapping is a key output for identifying coverage gaps and supporting planning decisions; hence emphasis on clarity, interactivity, and usability of the dashboard.
API Design & Integration Readiness	20	The registry acts as a foundational layer for future integration; therefore, well-defined and scalable APIs are essential for interoperability with other systems (e.g., VMS, Analytics, IoT).
Scalability & Performance	20	The system must support large-scale deployment across the state (≥1 lakh cameras) with efficient performance, fast response times, and optimized data handling.
Security & Access Control	10	Sensitive infrastructure data requires robust authentication, authorization, role-based access control, and secure data handling practices.
Innovation & Value Addition	5	Limited weightage as the focus is on building a robust foundational system; however, any innovative features or enhancements that add value are encouraged.
TOTAL	100	

Fig 1.1