Pertaining to all Model Hackathon Problem Statements

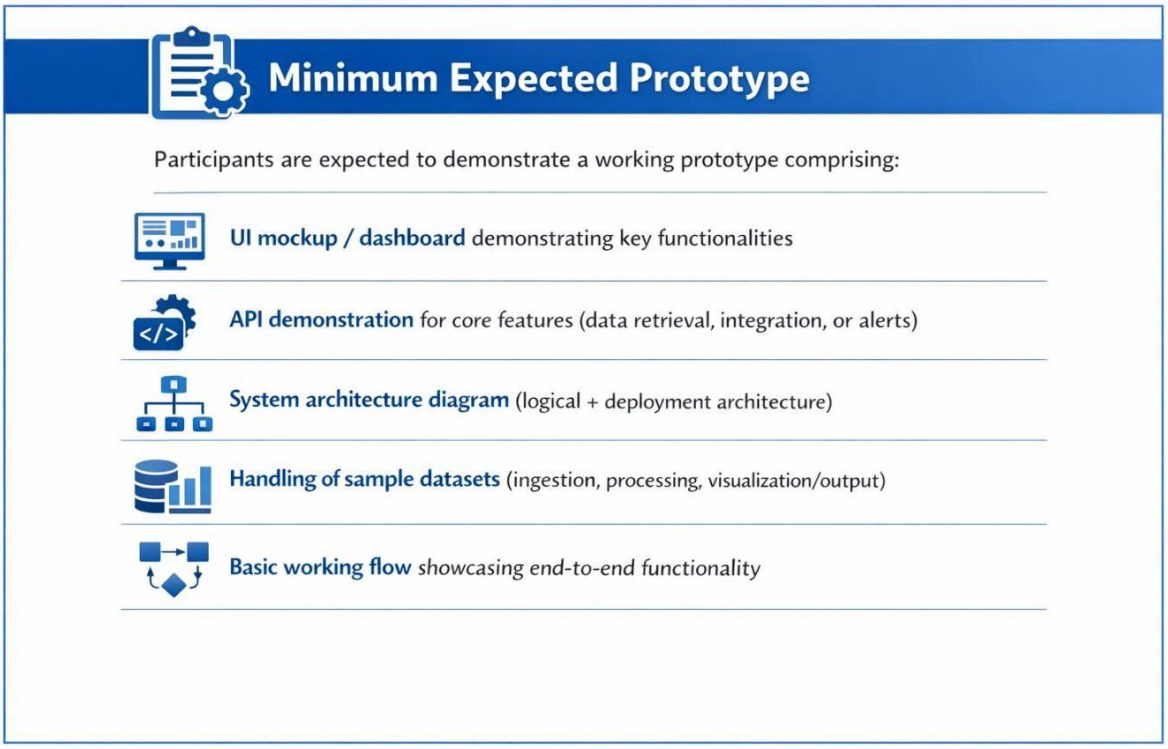

Fig 5


Bonus Evaluation Criteria
Additional weightage may be given for:
Innovation Beyond Problem Scope
Creative solutions extending beyond the defined problem
AI & Machine Learning Integration
Use of AI/ML for intelligent processing & automation
Scalability for State-Level Deployment
Designed for large-scale and statewide implementation
Optimized for Low Bandwidth
Efficient in resource-constrained environments
User-Centric Design
Easy adoption & intuitive user experience

Fig 5.1


AI/ML Applications on CCTV Feeds (Bonus Section)
This section focuses on AI/ML-based video analytics aligned with real-world government needs such as public safety, monitoring. and operational efficiency.
Key use cases include (not limited to):
ABC 1234
ANPR: Vehicle identification & tracking
Crowd Analysis: Crowd monitoring & safety
Suspicious Activity: Detect unusual behavior
Weapon Detection: Identify threats in real-time
Face Recognition: Identify persons of interest
Fire/Smoke Detection: Early hazard alerts
Animal Detection: Monitor stray/wild animals
Teams are encouraged to go beyond these use cases and propose innovative, scalable AI solutions.

Fig 5.2

Deployment Constraints

Government Infrastructure Compatibility

- GSWAN, State Data Center, Govt Cloud

Network Constraints (Low Bandwidth & High Latency)

Efficient data
- transmission & lightweight architecture

Interoperability & Open Standards

Adhere to open standards & lightweight architectures

Data Security & Access Control

- Strong encryption & access controls

Modular & Scalable Deployment

- Flexible & scalable architecture

Fig 5.3

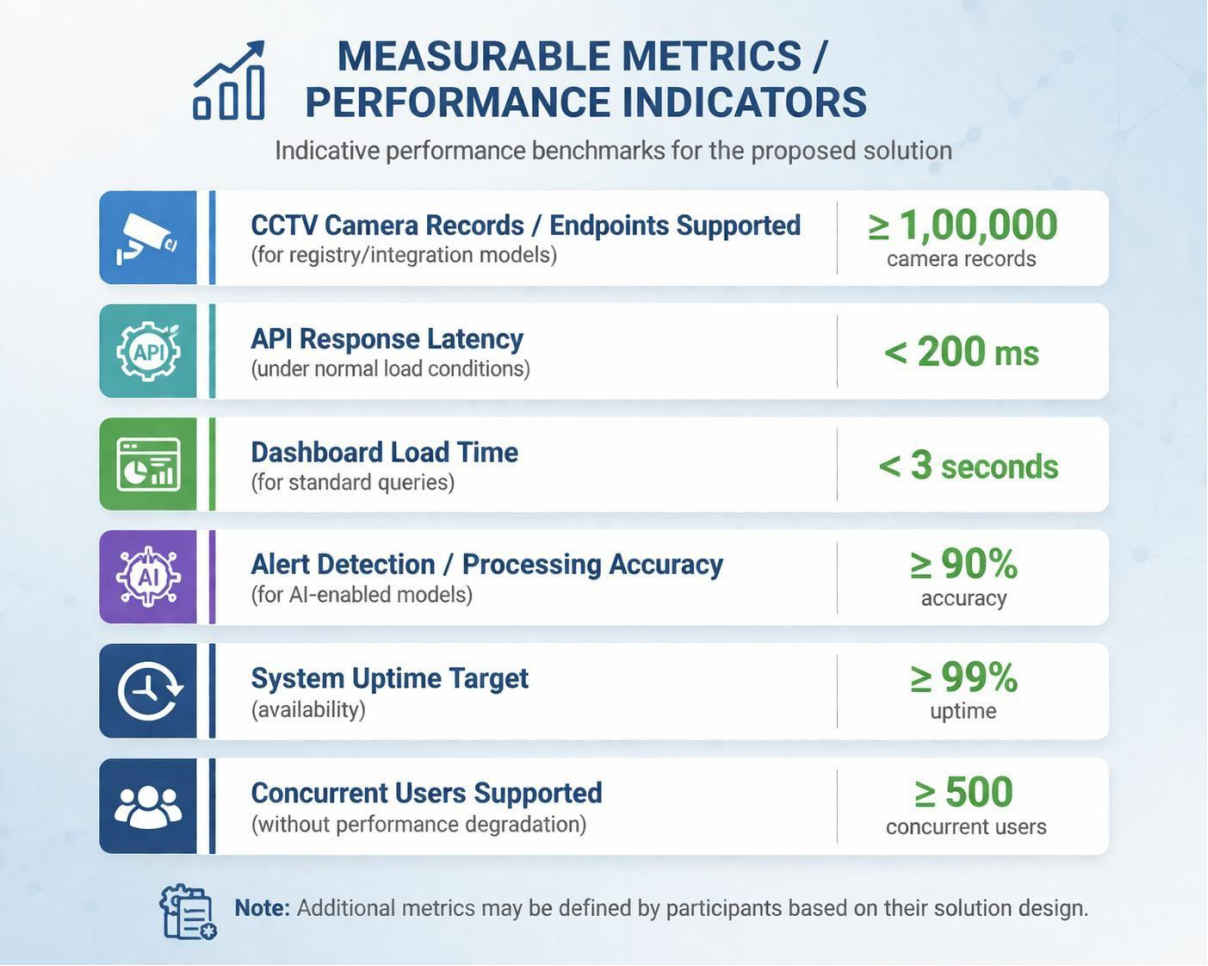
MEASURABLE METRICS / PERFORMANCE INDICATORS
Indicative performance benchmarks for the proposed solution
CCTV Camera Records / Endpoints Supported
(for registry/integration models)
≥ 1,00,000
camera records
API Response Latency
(under normal load conditions)
< 200 ms
Dashboard Load Time
(for standard queries)
< 3 seconds
Alert Detection / Processing Accuracy
(for AI-enabled models)
≥ 90%
accuracy
System Uptime Target
(availability)
≥ 99%
uptime
Concurrent Users Supported
(without performance degradation)
≥ 500
concurrent users
Note: Additional metrics may be defined by participants based on their solution design.

Fig 5.4


Integrating Non-IP Cameras into IP-Based Systems
The solution should support integration of non-IP (analog) CCTV cameras into the IP-based system using encoders/transponders and protocol conversion. This will enable seamless interoperability, cost-effective implementation, and gradual transition to a unified IP-based architecture.
Non-IP (Analog) CCTV
IP (Digital) CCTV
RTSP
H.264
Encoders / Transponders
Protocol Conversion
VMS
Video Encoder/ Decoder
Seamless Interoperability
Cost-effective Implementation
Gradual Transition to Unified IP-Based Architecture

Fig 5.5

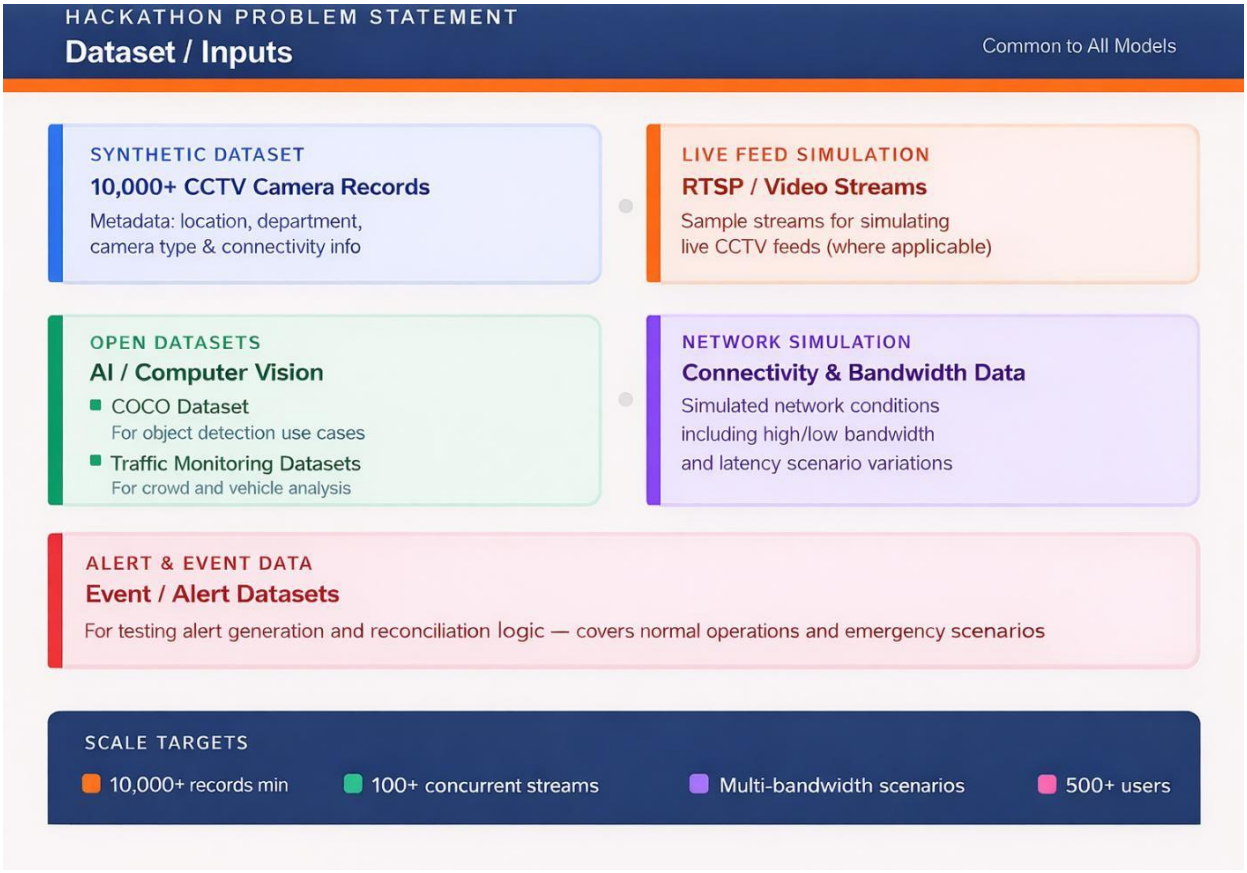
HACKATHON PROBLEM STATEMENT
Dataset / Inputs
Common to All Models
SYNTHETIC DATASET
10,000+ CCTV Camera Records
Metadata: location, department, camera type & connectivity info
LIVE FEED SIMULATION
RTSP / Video Streams
Sample streams for simulating live CCTV feeds (where applicable)
OPEN DATASETS
AI / Computer Vision
COCO Dataset
For object detection use cases
Traffic Monitoring Datasets
For crowd and vehicle analysis
NETWORK SIMULATION
Connectivity & Bandwidth Data
Simulated network conditions including high/low bandwidth and latency scenario variations
ALERT & EVENT DATA
Event / Alert Datasets
For testing alert generation and reconciliation logic — covers normal operations and emergency scenarios
SCALE TARGETS
10,000+ records min
100+ concurrent streams
Multi-bandwidth scenarios
500+ users

Fig 5.6