CASE STUDY (Smart City)

The Client The client (confidential), is based out of South East Asia. They have a requirement for developing the infrastructure of the city which includes video surveillance to become a differentiator in the Surveillance Security space, and simultaneously to build a modern smart city.

The Pain Point The client's need was to protect physical security of important facilities and infrastructure. Most of the client's video surveillance installations had a large number of cameras with central control rooms for manually viewing the camera feeds. The task was highly manpower intensive, error-prone and not easily scalable. There had been instances of incidents not being reported or alarms not being raised for suspicious activities. Also the client was facing difficulties in extracting specific incidents/activities from huge amount of video footage that was stored in the system. There was an urgent need to reduce the manual inspection and verification to improve effectiveness. The client was looking for video analytics solutions to be deployed for effective traffic management, security in public areas and car park monitoring system.

The Solution The above mentioned pain points were overcome through Graymatics Smart Surveillance solutions. The first phase of the project involved deploying video analytics for over 100 cameras. These cameras were located in predefined locations like highways, parking lots and junctions. The analytics helped to understand the project environment and design strategy for second phase of the project. The client chose the on-premise option for deploying the smart surveillance solution. However, both on premise and on cloud alternatives are available. After discussing the requirements with the client and finalizing the use cases to be implemented, the system was trained for recognizing number plates in that region. Following surveillance features were deployed for the client-

People
Analytics

- **Face detection**

Smart Surveillance was configured individually for 10 cameras to detect and track faces of people present in the CCTV video feeds. The gender, age, ethnicity, and other attributes were recognized and captured. Optionally, emotion detection was included to recognize if the person is anxious, angry, happy, etc.

- **People counting**

The people counting feature present in the Smart Surveillance, configured in individual cameras, was used to count the number of people present in the CCTV footage at all times. Smart Surveillance monitored the count 24X7 and kept a record as metadata. This feature is especially useful for congestion, crowd detection and analyzing the peak

- **Clothing and Attire attributes**

Graymatics Smart Surveillance provides detailed information about the clothing and attire of the people present in the Video feeds. This provided detailed insights of person of interest, which can help in identification during forensic video search.

- **Face Recognition**

Smart Surveillance provides the Face Recognition feature as a premium feature, to be configured by the security personnel in individual cameras. People appearing hence in any CCTV footage were then recognized and tracked.

Vehicle Analytics

- **Vehicle Counting**

The vehicle counting feature present in the Smart Surveillance, configured in individual cameras, was used to count the number of vehicles present in the CCTV footage at all times. Smart Surveillance monitored the count 24X7 and kept a record as metadata. This feature is especially useful for congestion, analyzing the peak timings and entry or exit of vehicles.

- **Traffic Flow Analysis**

This feature helps detect road blocks, traffic deadlocks and accidents. It also detects speed of vehicles and measure travel time on a stretch of road, during different times of the day, this feature can be configured in individual cameras.

- **Car Park Monitoring**

Car park monitoring feature of Smart Surveillance allows the parking locations to be continuously monitored and important information including entry and exit times, car waiting time, and illegal parking to be detected and reported. Since the camera was subscribed to the Vehicle make and model and Automatic Number Plate recognition features, more valuable

insights about individual vehicles were generated.

- **Vehicle make and model**

The Vehicle make and model feature allows for vehicles present in the camera footage to be tracked, and details of the vehicles including make and model, along with timestamp, displayed and stored as metadata.

- **Automatic Number Plate Recognition**

Automatic Number Plate Recognition feature of Smart Surveillance possess the capability of reading and displaying the number plates of vehicles whether stationary or moving at high speed. The feature was especially useful in scenarios like identifying unauthorized vehicles entering premises, and identifying speeding vehicles.
Intrusion detection- People and Vehicle

The intrusion detection feature was useful to monitor the activity in restricted areas, or unauthorized entrances in the premises. Smart Surveillance allows the security personnel to individually subscribe cameras to this feature, define the area to be monitored by simply demarcating the area on display, and setting the time for monitoring. An alarm is raised upon detection of intrusion, and detailed description of the intruder is hence displayed.

Water Management This feature can be configured into individual cameras to monitor water levels in tunnels & on roads. It also monitors drainages and detects blockages and can be used to monitor and protect reservoirs.

The Outcome

The client benefited by

- Prompt notifications across multiple channels ensured timely response by the security personnel in the event of any incident. This helped the client increase their efficiency and react efficiently before the situation aggravated. In a nutshell, there was an enhanced response with instant alerts to authorized personnel.
- The client got a detailed report about crowded areas and peak and off peak hours required to develop an efficient traffic monitoring system.

- Also the video analytics were incorporated in the client's existing surveillance system which means they didn't have to incur any additional cost in hardware installation of cameras.
- It also helped them build an effective car park monitoring system giving accurate results about number of cars and their details.
- It helped them manage the vehicle traffic flow and immediately respond to accidents and suspicious events.

Sample output for vehicle counting

Sample output for vehicle make and model and ANPR

Sample output for people counting

Note- Figures and numbers are for illustration purpose.