LOGIPIX

TRAFFIC SURVEILLANCE

with Logipix System

www.logipix.com

PROFESSIONAL TRAFFIC SURVEILLANCE

Main benefits

- **A single camera can cover multiple lanes and provides recognizable license plates in all light conditions**
- **Automatic Video Content Analysis to capture offending vehicles**
- **Scalable system structure up to thousands of cameras in one system**
- **Highly optimized, efficient violation management**

Today’s challanges

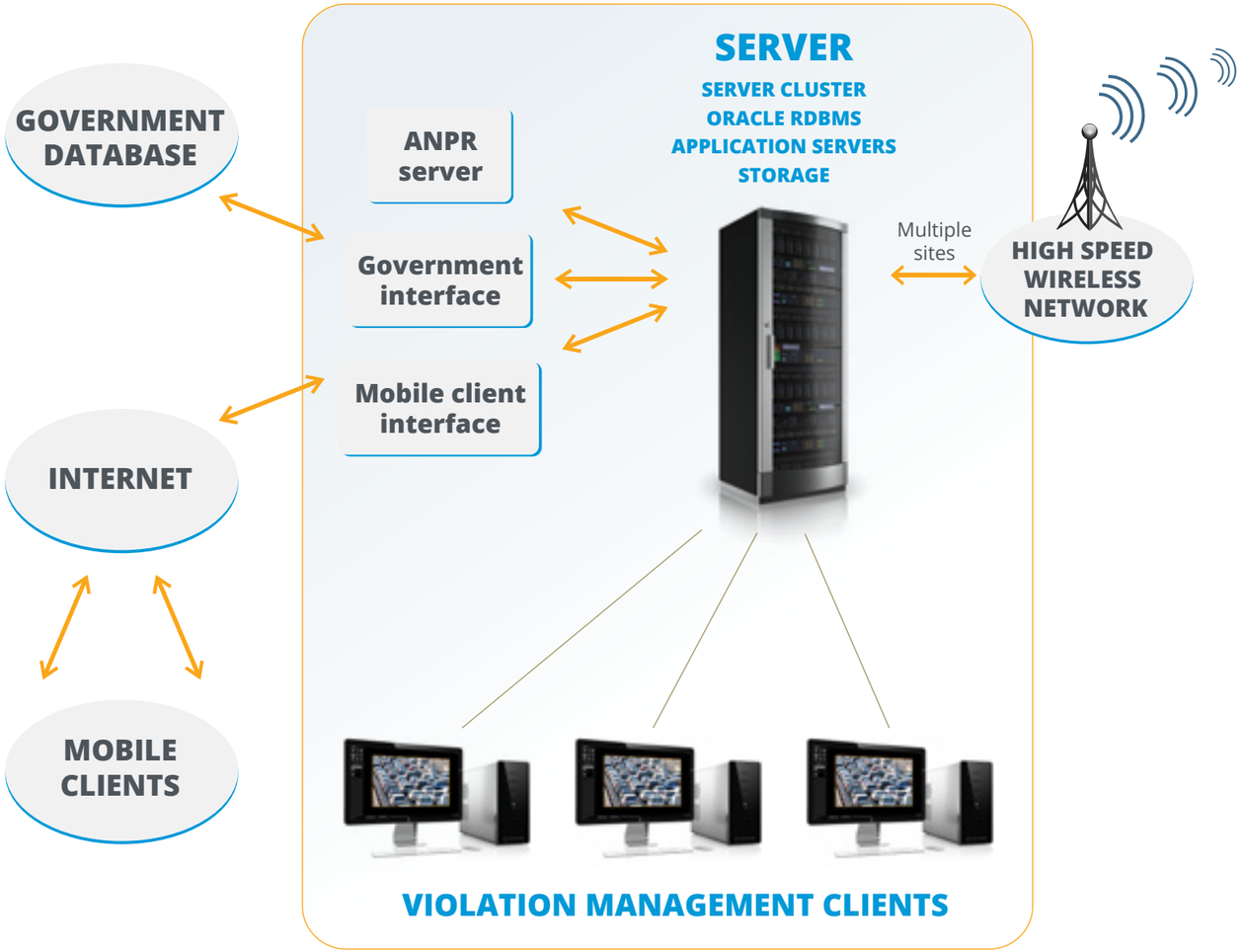
Violating traffic rules is increasingly becoming a crucial problem in modern urban environments. Logipix has the contemporary answer for how to maintain security in everyday traffic. Fast reaction to traffic violences and prevention of the offenses are the keys to ensuring the safety of the vehicles and even human life.
The Logipix end-to-end video surveillance system has been designed specifically with this in mind.

Advanced Video Content Analysis

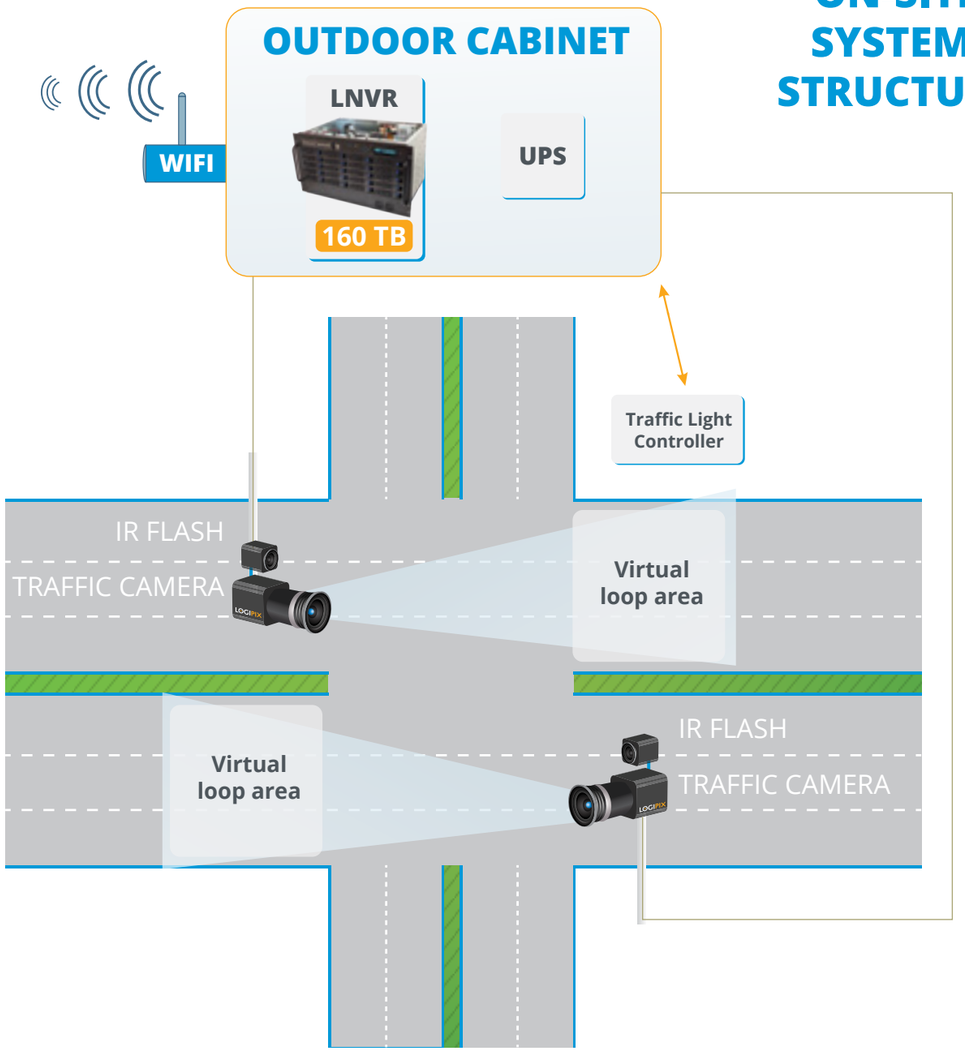
- Stop line violation detection
- Red light violation detection
- Bus lane violation detection
- Parking violation detection
- Traffic counting

THE LOGIPIX TRAFFIC SURVEILLANCE SYSTEM

VIOLATION MANAGEMENT CENTER



ON-SITE SYSTEM STRUCTURE



FEATURES OF THE LOGIPIX TRAFFIC SYSTEMS

General features and functions

- End-to-end system from cameras through video recorders to specific video management software
- Wide dynamic range multi-megapixel cameras of 14 MP and beyond to monitor intersections and roads
- Specifically developed IR flash works integrated with the LOGIPIX cameras to provide clear and sharp images
- Extremely detailed images for easy and accurate plate number recognition in every light conditions
- High frame rate surveillance
- Visually lossless JPEG2000 compression standard
- Operation over low-bandwidth networks

Logipix ONE

1” sensor 14 MP camera with IR flash

LOGIPIX ONE can cover large areas, therefore a single device can monitor multiple lanes. The camera provides a high frame rate video stream with enormous resolution and wide dynamic range, therefore object tracking and video content analysis can be more accurate. The camera increases the reliability level of Video Content Analysis, thus automated violation detection methods are able to work with higher reliability.

Capturing license plates at a busy junction or even on the highway is an easy task for Logipix ONE, no matter if it’s day or night. With the specifically developed, integrated IR flash, the camera offers sharp and detailed images of license plates in extreme situations, even when blinding headlights hinder the visibility conditions. Among three built-in optical filters, the LOGIPIX ONE camera contains a movable IR pass filter that only lets through the valuable Infra Red lights to the sensor. The IR flash is synchronized with the camera and it flashes the monitored object at every recorded frame. Its light is focusable in order to illuminate only the necessary area.

IR flash

WHAT DOES LOGIPIX TRAFFIC SURVEILLANCE OFFERS

Zone violation detections

- Automatic VCA detection of any vehicle that violates relevant zone rules (e.g.: stop sign, bus lane, parking place)
- Machine recognition of plate numbers of the offending vehicles
- Automatic resolution reduction on the designated picture area in order to protect privacy rights
- Manual or event triggered download of the security footage
- Create probative visual evidence

Video Content Analysis measures the presence and the speed of the vehicles within a designated area and detects any zone violation automatically. Besides the security footage, the system saves the vehicle's minimum and maximum speeds in the zone and the time which the vehicle spent in the designated area. Leading edge security cameras within the system record exceptionally high quality images that provide an undoubted evidence for the local authority.

Red light violation detection

- Automatic VCA detection of red light violations
- Recognition of the plate numbers of the offending vehicles
- Interfacing to Government system's database to identify the offender
- Universal interface for connection to traffic light controllers for ease capturing of traffic light states
- Providing irrefutable visual evidence

Logipix engineers have developed an automatic, Video Content Analysis based red light violation detection. With the application all red light violations are captured with ease and unmatched accuracy. The Logipix system is able to connect to third-party license plate recognition software and external database to identify the offender.

Traffic counting

- VCA based automatic vehicle counting
- Accurate, reliable operation
- The process of the maintenance is easier in contrast with the installed induction loop traffic counter
- Monitoring traffic load in each lane
- Direct connection to traffic light system for dynamic traffic light control

The application precisely counts the crossing vehicles at every junction, however busy their traffic may be and analyzes the traffic load in the lanes. Based on the results, the operators are able to dynamically control the traffic light states and therefore efficiently manage the traffic flow.

CASE STUDY IN BRIEF

Red light violation detection in Yerevan

Motivation and Solution

The capital city of Armenia is Yerevan. With the growth of the economy, the population increased as did the number of the vehicles, calling for a need to be able to register and easily enforce traffic violations in the hope that they would decrease as a result.

Ellips GA Co Ltd. is the leading company in Armenia in the security industry. They installed the LOGIPIX multi-megapixel IP surveillance system, consisting of 480 pieces of LOGIPIX 15MP D/N cameras, in order to monitor traffic violations at more than 120 traffic light controlled junctions in the capital city. The operator company, Security Dream, manages the multi-megapixel system using Control Center software, in every monitoring center at each crossroad. The system is capable of storing around 1920 Tbytes of surveillance data via 120 Logipix Network Video Recorders.

Benefits

Leveraging multi-megapixel resolution Logipix cameras, the operators can effectively monitor and register traffic violations. As the system of traffic lights is connected to Logipix system, the state of the traffic lights can be displayed on the camera images. Downloading the security footage, which provides clearly visible license plates, the operators are able to deliver video evidences of the offenders straight away for the relevant organizations.

In the monitoring room

Operators at Security Dream Co, Ltd. were impressed with how easily they could retrieve evidence of the offending vehicles using the Logipix video management software. Control Center's user interface is intuitive and has a steep learning curve. After system configuration was completed, the operators are and have been able to learn how to manage the system within an hour.

Due to the flexibility of Logipix system, the integrators have been able to monitor the state of the traffic lights at every intersection without the need of additional hefty financial investments. The controllers of the traffic lights are connected to the Logipix Network Video Recorders through a zone extender, and by a dedicated software development, the state of the traffic lights can be viewed on the camera pictures.

Using 15MP Logipix cameras, license-plates are easily readable on screen. Operators can get clear and sharp images of the desired picture details. At the monitoring center they can work with a full resolution zoomed enlargement because of a unique Logipix application; the Logi-zoom function.

Archived videos can be downloaded promptly by the operators with a specially developed Control Center function. With Download Delivery, operators are able to download a video stream to a computer immediately with a pre-defined time interval by a single click.

Employees at Security Dream Co, Ltd. can easily and quickly deliver processed information of the traffic offenders to the Yerevan Police Department.

Automatic red light violation detection and traffic counting

Solution

As the population density of modern cities increases to a historical high, so does the number of vehicles and therefore the traffic offenses caused by them. The main goal of the Logipix System is to help managing the traffic flow and automatically detecting red light violations.

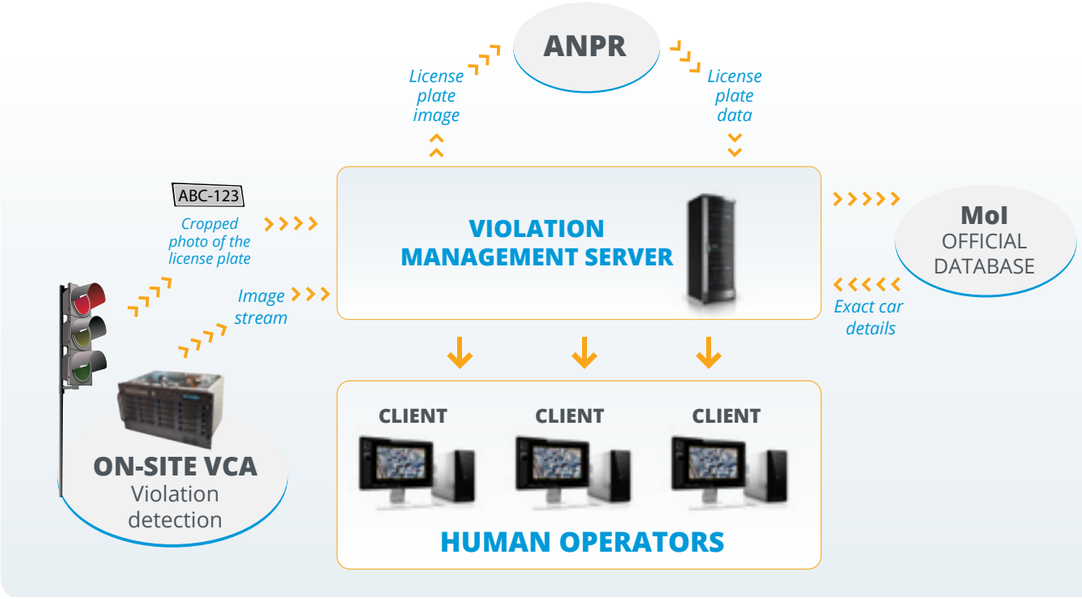
The entire system consists of 250 Network Video Recorders being placed at every observed intersections. Three 14 megapixel Logipix ONE cameras and a LOGIPIX Full HD PTZ are connected to each NVR. Logipix ONEs are working synchronized with the integrated IR flashes and monitoring the car lanes of the intersections. The controllers of the traffic lights are connected to the Network Video Recorders through an I/O panel, thus the states of the traffic lights can be captured as well.

Benefits

LOGIPIX System automatically detects all the red light violations in the intersections by a dedicated VCA application and counts the passing vehicles. Associated third-party elements provide exact vehicle data of the offenders and finally as part of the process the violations are being approved off-line by police officers.
Due to their wide dynamic range feature, LOGIPIX ONE cameras with the help of IR flashes provide clear and sharp images of the license plates in even the most extreme light conditions.
The automatically created violation records are processed in an intuitive management software by the operators.
As the system provides traffic counting information as well, real-time operators in the monitoring room can effectively manage traffic flow.

Fully automatic process

LOGIPIX Traffic Surveillance System continuously records high resolution security footages of the monitored intersections. If a vehicle breaks the red light rule, the system automatically detects it with high precision, creates an event which will be saved in a database, furthermore it downloads 5 images of the offending vehicle to a container.
As a next step, the system automatically crops the license plates from the pictures and sends them to a third-party license plate recognition software to identify them. The license plate recognition software sends back the identified data to the system which sends the information to the Ministry of Interior. The MoI sends back the relevant information (e.g.: car type, color, etc...) of the vehicle based on the identified license plate. This information is then entered into the system's violations work basket. As final step of the process the operators confirm these automatically created violations.



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