INTELLIGENT TRAFFIC SYSTEM SOLUTION

Enhanced Security / Reduced Labor Costs / Efficient
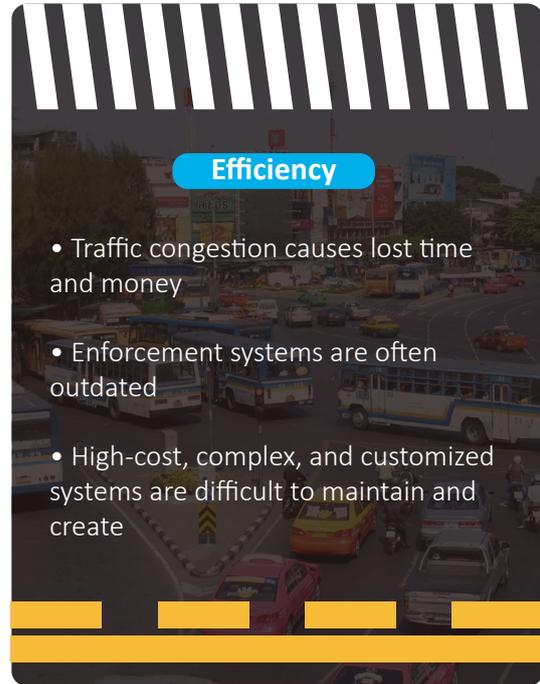
CHALLENGES

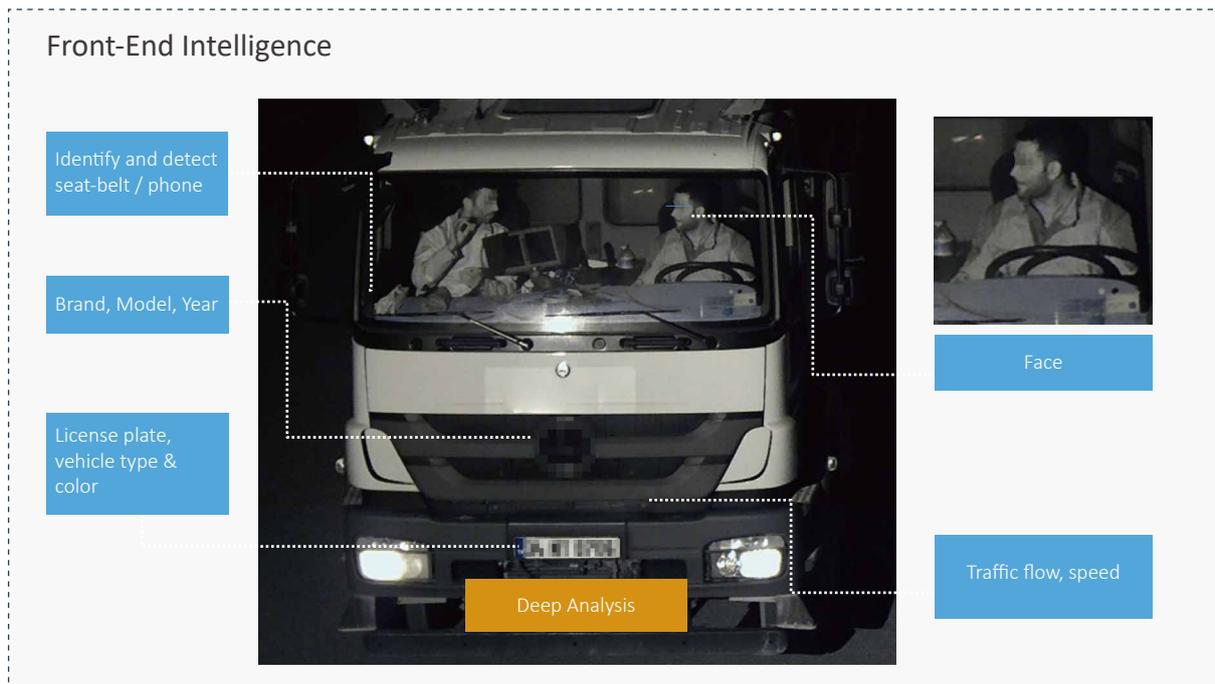**Security**

...th
...road
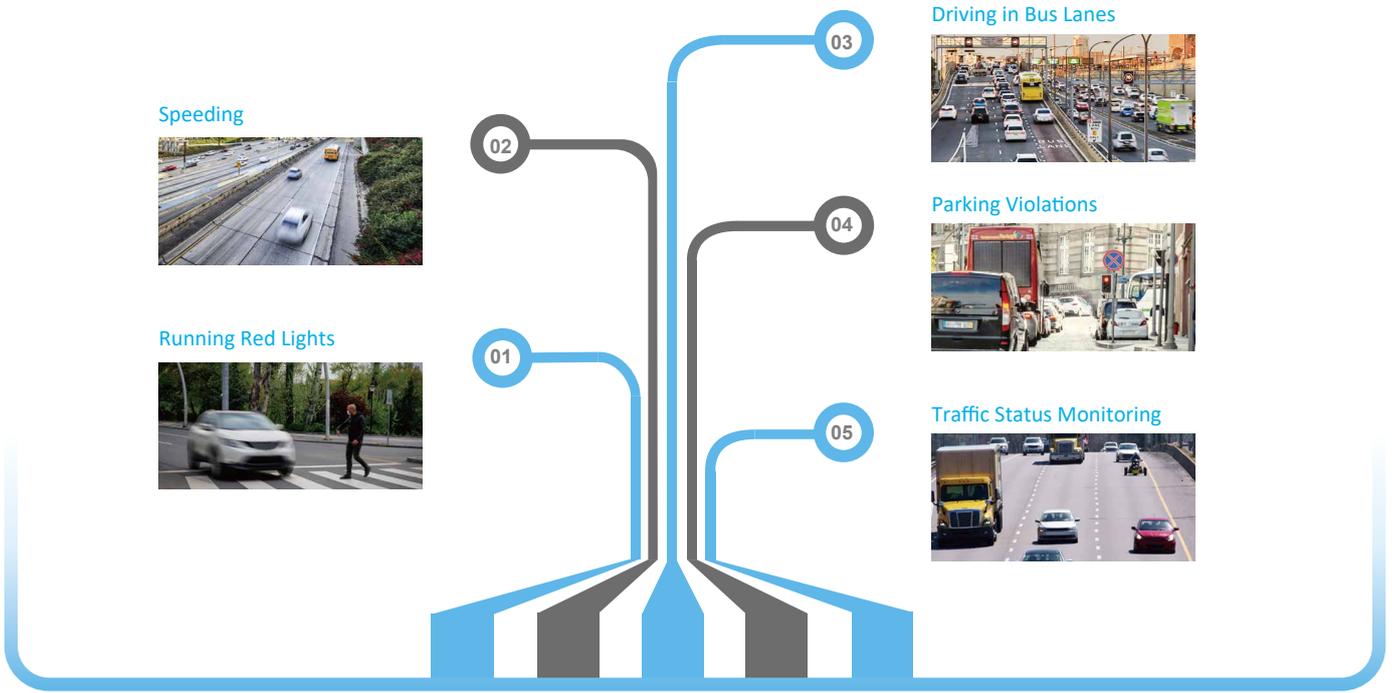
...ities

Efficiency

• Traffic congestion causes lost time and money

• Enforcement systems are often outdated

• High-cost, complex, and customized systems are difficult to maintain and create

Face

Deep Analysis

Traffic flow, speed

...e-art brain, continuously collecting traffic data and transforming it ...k-end management platform. This data can then be analyzed in order ...rends.

Based on advanced intelligent algorithms, Dahua ITS cameras can identify and process a variety of driving behaviors and record driving data.

Speeding

Running Red Lights

02

01

03 Driving in Bus Lanes

04 Parking Violations

05 Traffic Status Monitoring

SOLUTION HIGHLIGHTS

Enhanced Security
Reduce traffic accidents by building up driver awareness of traffic regulations through efficient violation detection and enforcement.

Reduced Labor Costs
Advanced technologies such as LPR and fuzzy search reduce manpower demands on the police force while increasing enforcement efficiency.

Efficient
Significantly improves traveler safety and comfort, delivering substantial social and economic benefits by saving energy and protecting the environment.

OVERVIEW

• Red Light Enforcement

• Traffic Signal Control

• Point Speed Enforcement

• Bus Lane Enforcement

123ABC

• Parking Violations

123ABC

• Section Speed Enforcement

• Real Time Traffic Status Display
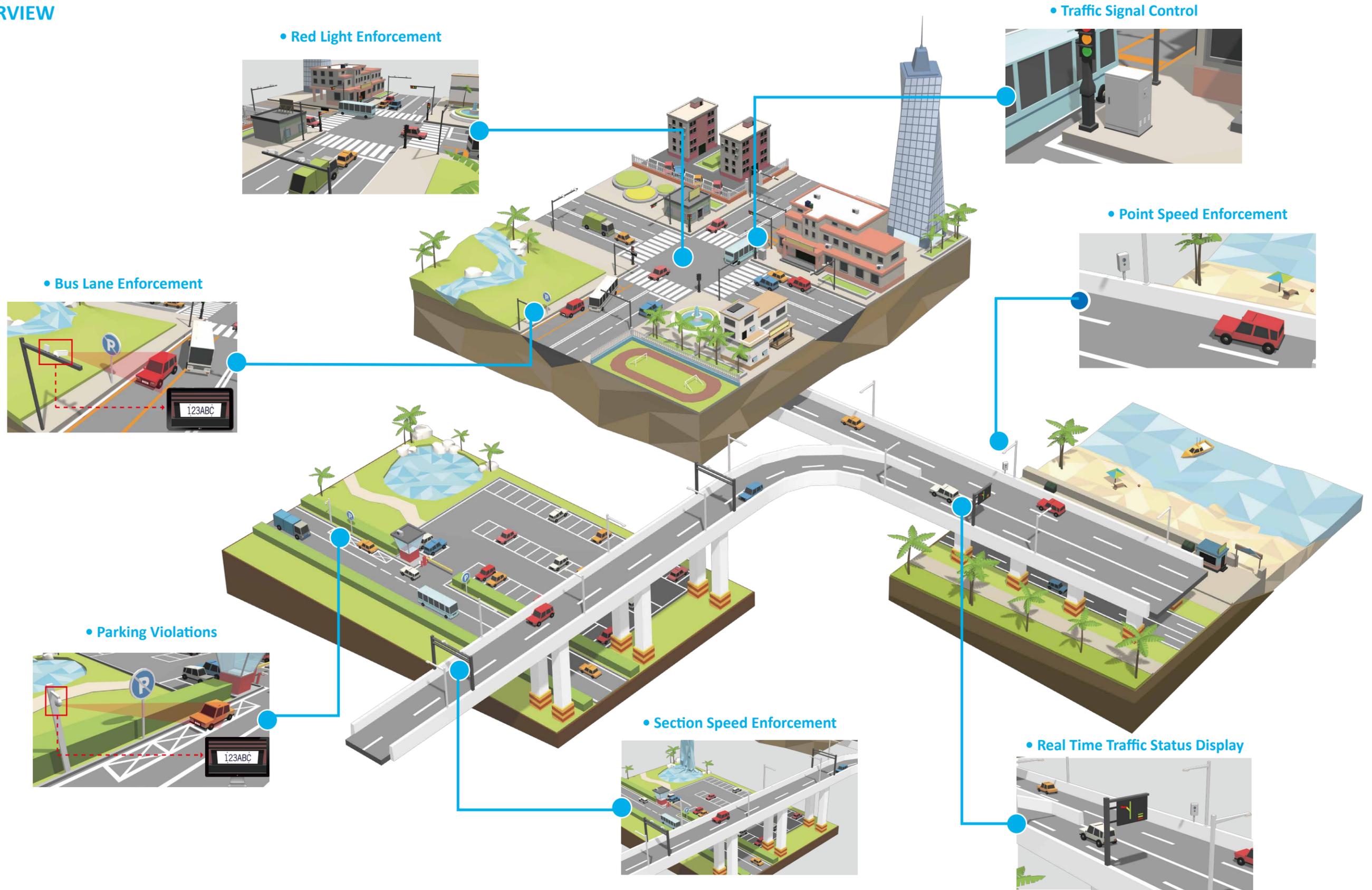
INTELLIGENT TRAFFIC SYSTEM SOLUTION

The Intelligent Traffic Systems (ITS) focuses on the integration of computer, electronics, communication technologies and management strategies. It provides relevant traveler information, which helps increase the efficiency of transportation systems. The system consists of traffic violation enforcement, road traffic flow monitoring, and traffic signal control systems.

The Typical ITS Solution Includes:
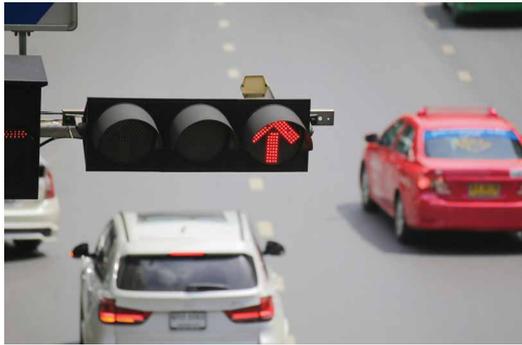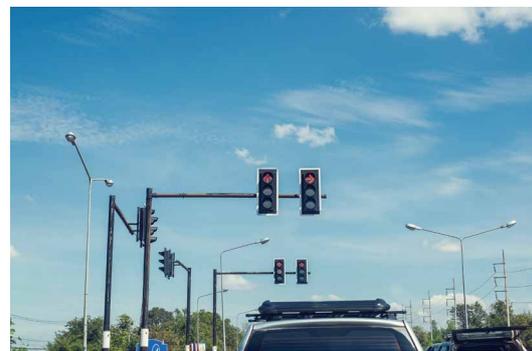
Red Light Enforcement

Speeding Detection

Bus Lane Enforcement

Parking Violations

Real-Time Traffic Status Display

Traffic Signal Control

RED LIGHT ENFORCEMENT

Background

Safe public transportation is a global concern, especially in responding quickly to traffic accidents. In a modern society with increased mobility, red light violation is a major factor in traffic accidents. Every year, 21.5% of all traffic accidents are caused by running red lights incidents. The Dahua Red Light Enforcement Solution reduces accidents to create safer and more secure roads for citizens.

System Overview
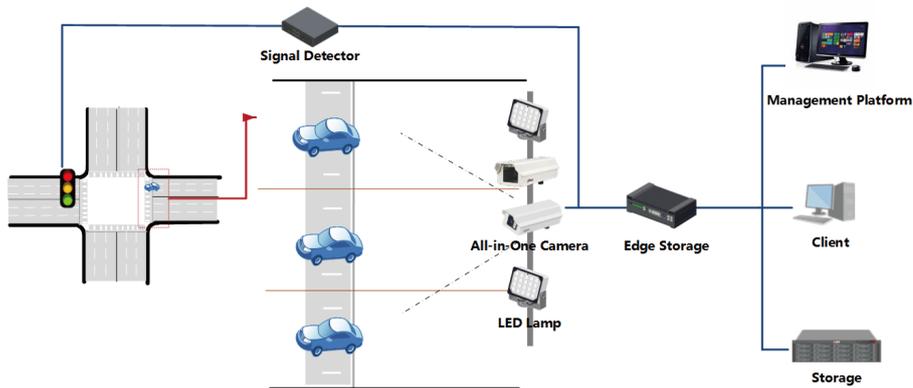
• Solution Details

At the core of the Red Light Enforcement Solution is a system that synchronizes the status of red light signals with the triggering signal to cameras. When a violation occurs, the Dahua all-in-one camera captures three images of the violation as evidence. These images include the vehicle license plate, status of traffic signal, and an overview of the scene. Afterwards, the platform and storage collects the data from each camera and distributes it to client operators for further processing. Edge storage devices ensure that the data from the cameras is saved, even in case of transmission failure.

• Features and Benefits

>> **Embedded LPR**

Enriched recognition features: 95% license plate recognition rate or higher with material collection for algorithm optimization.
The license plate color, vehicle color, vehicle brand recognition can be customized.

>> Automatic Day/Night Mode

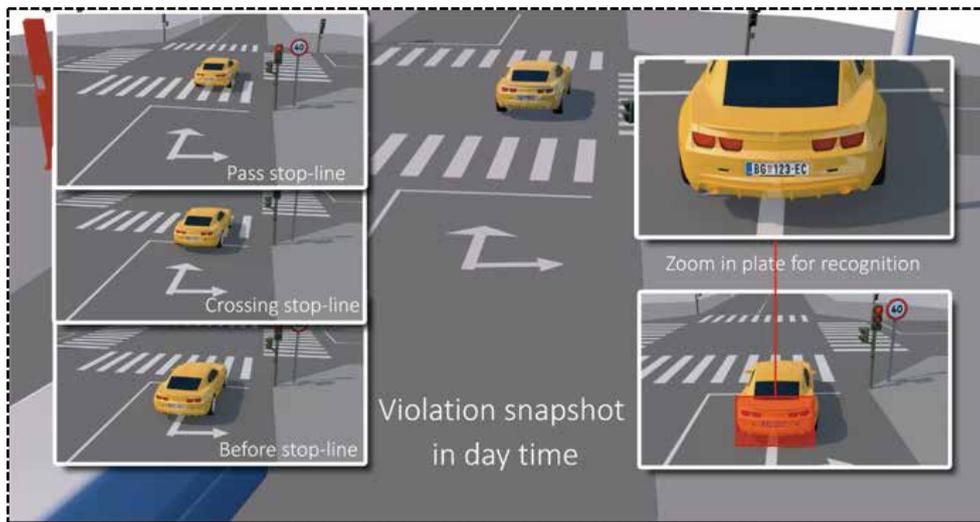Automatically distinguishes day/night without setting any parameters.

>> Advanced LPR Camera

High definition LPR camera captures more details.

Cover 3 or more lanes with only one enforcement device.

>> More Evidence for Investigation

Captures 4 snapshots of the violation in progress as evidence, including the status of traffic signal and plate number.

• Traffic Management Server Support

- Search and fuzzy search by plate/time/type of violations.
- Shows plate, record time, image thumbnails, and linked video.
- Supports real time monitoring.
- Supports block car alarm.

SPEEDING DETECTION

Background

Most governments all over the world prioritize the improvement of road safety. One of the available tools for influencing the behavior of road-users is traffic enforcement, particularly speed measurement. There are currently several ways to measure speed: section speed enforcement and point speed enforcement. Section speed enforcement, in contrast to point speed enforcement (e.g. radar boxes), has the advantage of measuring speed on a longer road stretch, preventing abrupt speed reduction at certain points. Point speed enforcement has the advantage of increased mobility so that traffic police can move to different points whenever necessary.

Point Speed Enforcement System

Portable Installation

Flash Lamp

Portable Radar

Fixed Installation

TRUCK
Lane:LANE 4
Speed:85km/h
Plate:K-045317

CAR
Lane:LANE 3
Speed:95km/h
Plate:D-7490

Fixed Radar

Control Center

Management System

Media Matrix

Video Wall

Switch

Storage

Client

Network Cable
Signal Cable
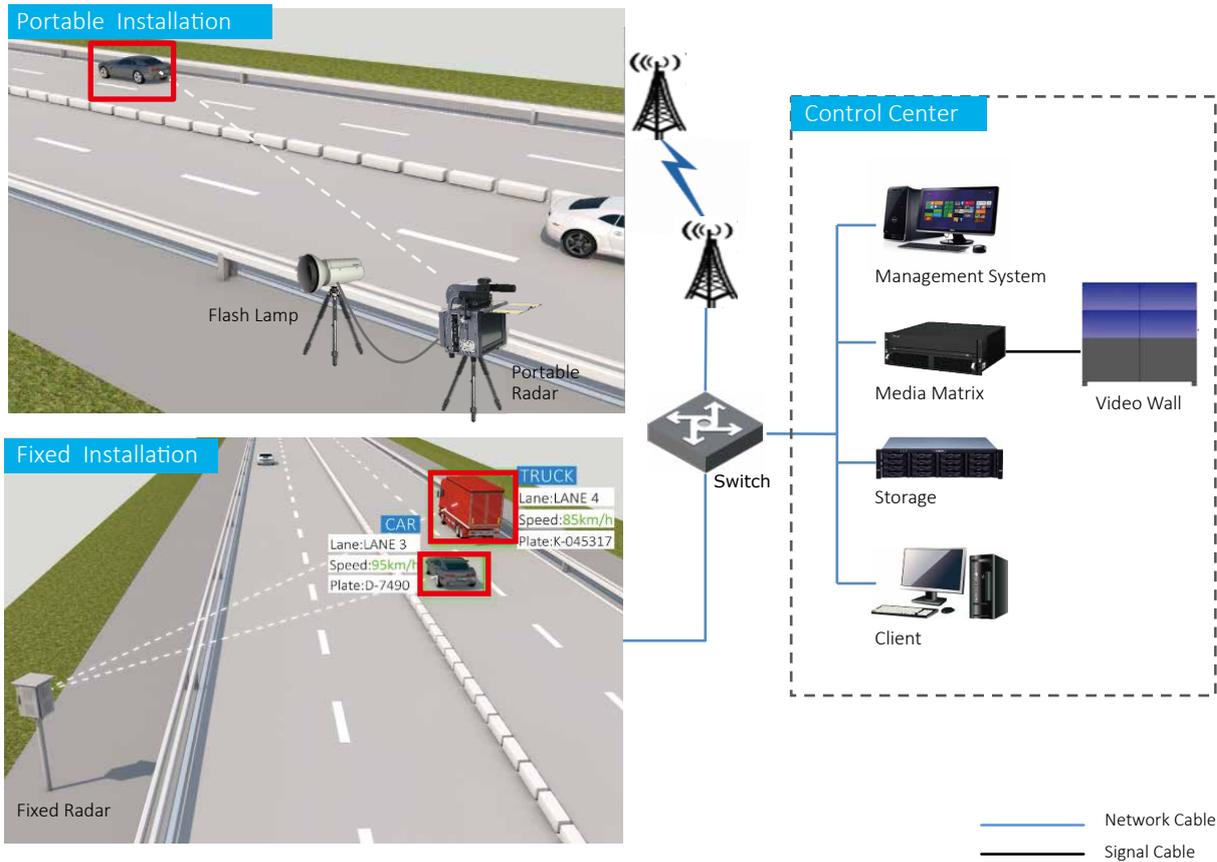
• **Solution Details**

The Dahua Point Speed Enforcement solution can effectively help transportation authorities detect vehicles that break the speed limit in all types of weather conditions. The system features an all-in-one design, making it easy to use and install. It consists of an high definition camera and multi-target tracking radar which provide an accurate instant speed measurement of each passing vehicle with high definition images. What's more, the IR flash lamp ensures excellent imaging capabilities even at night.

• **Features and Benefits**

• Supports measurement of multiple vehicles in different lanes with high-precision 3D radar.
• In addition to speed, cameras can also capture details such as plate number, vehicle type, and lane number.
• High definition cameras can operate around-the-clock.
• Long battery life, touch panel, and compact design provide better on-site enforcement.
• Easy setup, instant deployment.
• Uses wired/wireless (Wi-Fi, 4G) network to forward data back to the control center.

Section Speed Enforcement System
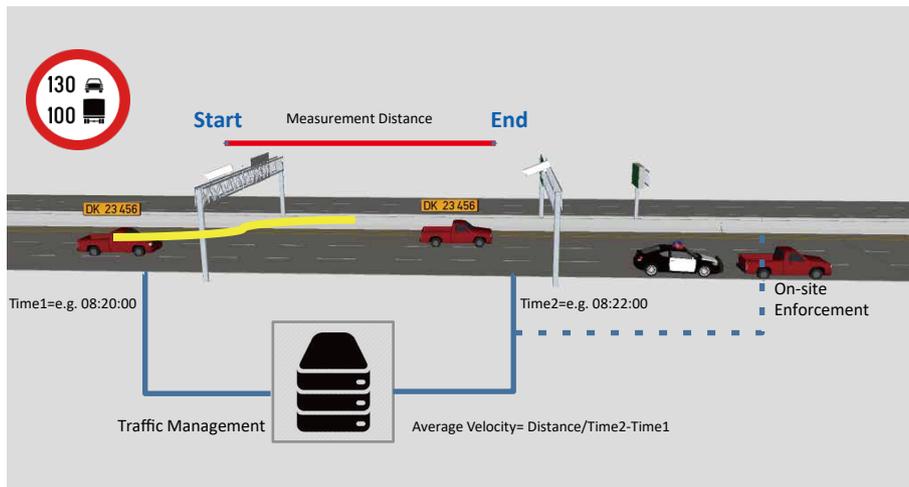
• Solution Details

The Dahua ANPR camera captures both the plate number and time from the beginning to the end of the intersection, and forwards this information to the platform. The platform then evaluates the average velocity of each passing vehicle. The margin of error of velocity detection diminishes as section length increases. The recommended distance of sections is 2-5km, of which accuracy reaches up to 99.8%. Multiple velocity limits can also be set for different types of vehicles.
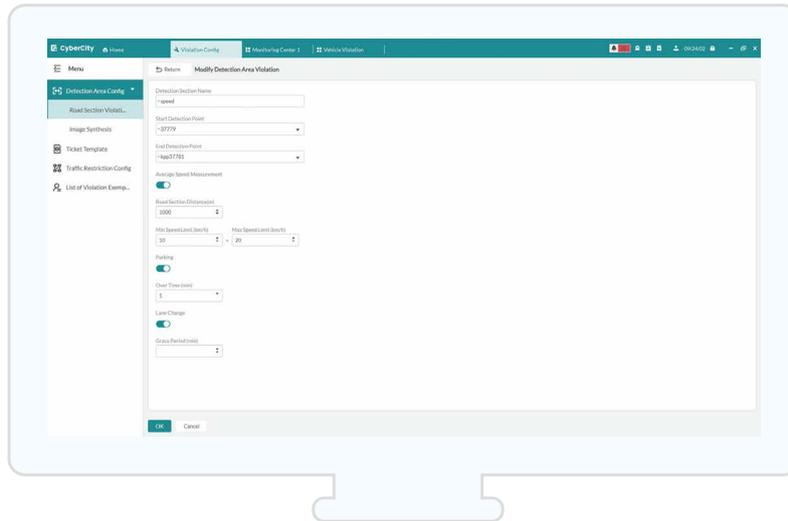
• Traffic Management Server Support

- Allows search and fuzzy search by plate/time/type of violation.
- Displays plate/record time/image thumbnails/linked video.
- Average speed measurement/setting according to different vehicle types.

• Features and Benefits

- 99.8% velocity measurement accuracy.
- One camera covers 3 lanes, making it cost-effective.
- Avoids abrupt braking to evade speed measurement.
- Reduces accident rates throughout entire section.
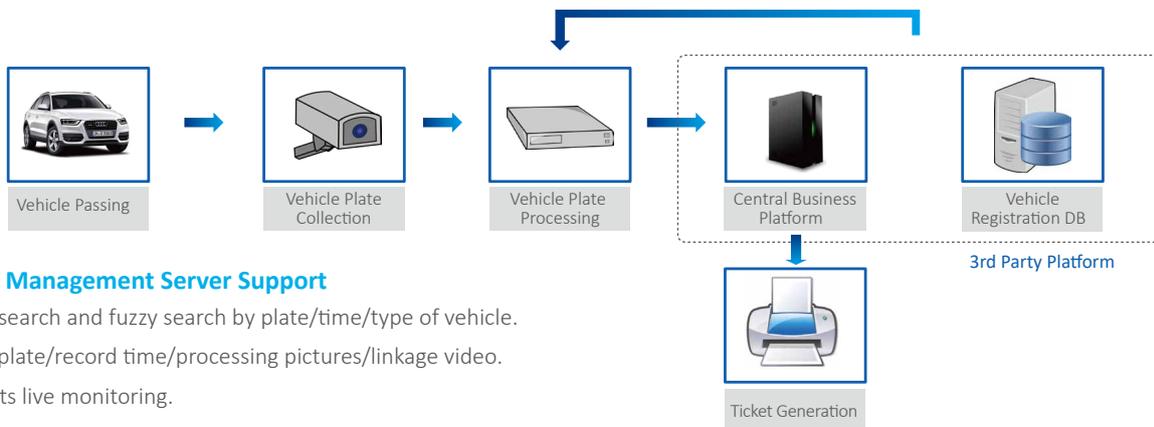
BUS LANE ENFORCEMENT

Background

Millions of commuters, students, parents, and the elderly rely on bus transportation every day to get to where they need to be. Buses help reduce traffic congestion and air pollution because they provide a more efficient way of moving people from one point to another. However, cars and trucks travelling and parking in bus lanes reduce the efficiency of buses and create unnecessary congestion.

System Overview
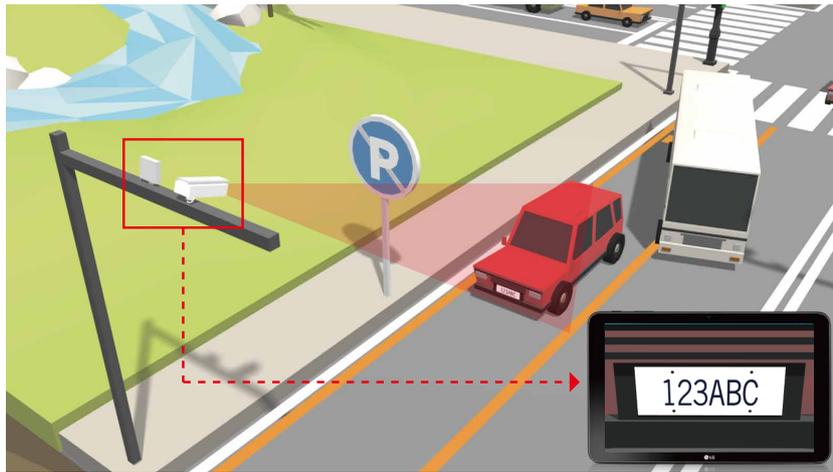
• Solution Details

This figure shows a camera with License Plate Recognition (LPR) enabled, capturing both the license plate number and a color snapshot of the vehicle crossing into the bus lane. The system then uploads the images to the CyberCity platform along with the vehicle plate number. The business platform then collects the vehicle list from the CyberCity and checks to see if they are on the list of permitted vehicles provided by the vehicle registration database. These records can then be verified and traffic tickets can be issued after verification and approval. The platform can also sort vehicles by custom rules or plate color, if provided.

Vehicle Passing → Vehicle Plate Collection → Vehicle Plate Processing → Central Business Platform → Vehicle Registration DB

3rd Party Platform

Ticket Generation

• Traffic Management Server Support

- Allows search and fuzzy search by plate/time/type of vehicle.
- Shows plate/record time/processing pictures/linkage video.
- Supports live monitoring.

• Features and Benefits

- Fully automated.
- Reduces traffic enforcement overhead costs.
- Speeds up bus transit times.
- Video-based vehicle classification to monitor different vehicles. No additional sensor is needed.
- Helps reduce carbon emissions.

PARKING VIOLATIONS

Background

Illegal parking is the act of parking vehicles in restricted areas such as fire lanes, crosswalks, sidewalks, in front of fire hydrants, etc.

Illegal parking hinders pedestrians

Traffic Chaos Caused By Illegal Parking

Illegally Parked Vehicle Occupies Bike Lane

System Overview
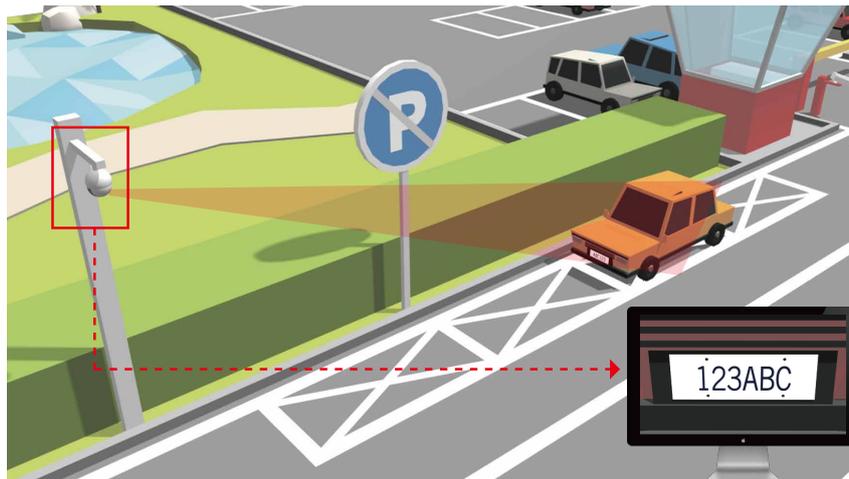
• Solution Details

The Dahua Parking Enforcement Solution is a system for detecting parking violations. It is used for simple and effective monitoring of parked cars in selected and precisely defined zones. It can effectively monitor areas where stopping or parking is prohibited, or areas with a limited parking time. Dahua devotes itself to safeguarding pedestrians, easing the burden on public transportation, and helping the disabled community.
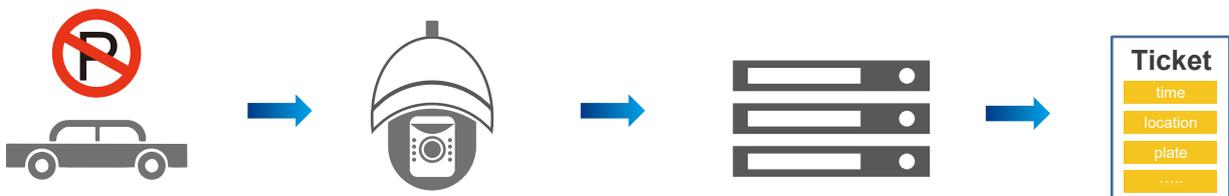
The system can patrol streets and pre-defined areas to detect parking offenses. As soon as a vehicle is detected stopping or parking in a restricted area, a ticket is issued. The parking citation includes a set of proof materials, including pictures of the vehicle and images of the license plate automatically by the LPR.

• **Features and Benefits**

Embedded algorithms support ANPR, and allows automatic image capturing of illegally parked vehicles.	Protects the right of way for pedestrians and bicyclists.	Lessens burden on police force, maximizing resources and reducing costs.	Video surveillance evidence ensures violators will be fairly fined.	Decreases traffic congestion and keeps roads safe and efficient.

REAL TIME TRAFFIC STATUS DISPLAY

Background

Millions of people deal with traffic congestion on a daily basis. The roadways leading into and out of most major cities can become gridlocked due to accidents, road construction, or simply a high number of cars on the road.

System Overview

• **Solution Details**

>> Traffic Data Collection

Traffic data is collected by traffic flow cameras using non-intrusive virtual loops where detection is done through advanced computer algorithms and does not involve any road work as in the case of an inductive loop. It can cover 1-4 lanes at a time, and has a 99% detection accuracy at speed below 80km/h.

Number of vehicles passing a point on the roadway

Traffic Flow

Average Speed

The average speed of vehicles during a specified period of time

Queue Length

Occupancy

The length of vehicles stopped in a lane during a period of time

Percent of time that an area on a roadway is occupied by vehicles

Headway

The distance from the tip of one vehicle to the tip of the next one behind it
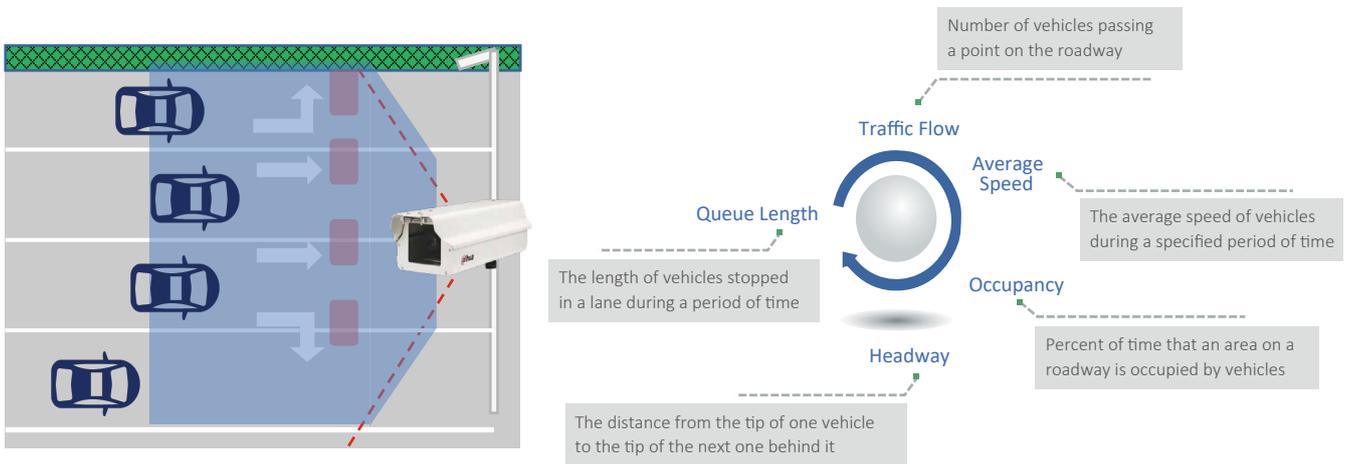
>> Information Dissemination

Another core system function is information dissemination. It can help guide traffic with these additional information types:

| Restriction | Weather | Road Status | Emergencies |

Others

Information Release Platform

Text Information

Road Map Information

Live Video Information

North Street

North Street congestion, please take a detour.

Automatic Display

Artifical Display

Local Information Release

General Information Publish
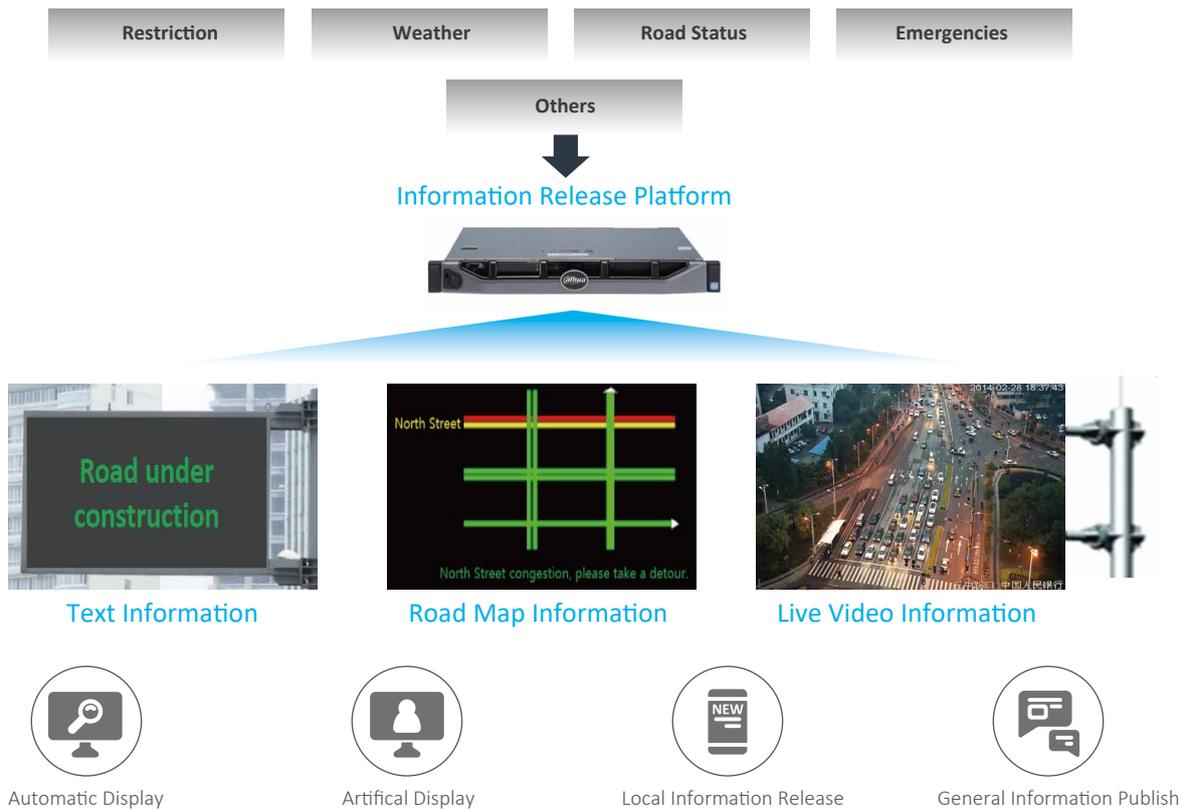
• Feature and Benefits

• Works for both highways and surface streets.

• Cameras provide accurate data in real-time.

• Collects data for transit authorities.

• Improves road safety by avoiding incidents and reducing accidents on the road.

Background

Many signal controllers are unable to automatically adjust signal timing based on real-time traffic flows, which could lead to long traffic queues during rush hour, requiring more police resources to direct traffic.

>> Traffic Data Processing

An advanced traffic flow information analysis algorithm gets and analyzes a city's traffic conditions in real time and displays results on special road signs in colors of red, yellow, and green to represent the speed of traffic flow. It serves as a guide to help drivers select the best travel route, easing overall traffic congestion.
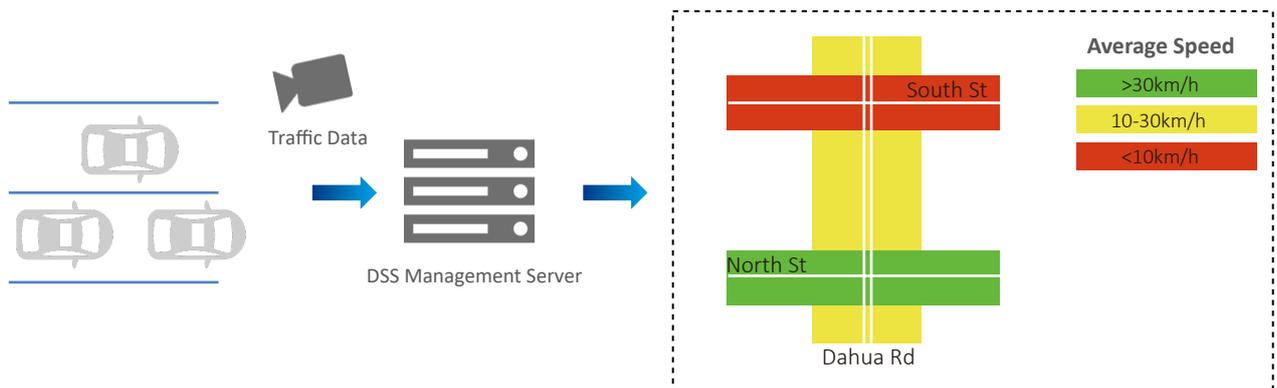

TRAFFIC SIGNAL CONTROL

System Overview

The Dahua VACS Solution is a system that can extend traffic light intervals according to the detected vehicle queue length of road intersections. It adopts a traffic flow camera to detect information such as traffic flow, headway, average speed, occupancy, and queue length. It effectively improves traffic conditions through adjustments to make traffic flow faster. In addition, the system works independently and does not require a central software platform.

• Solution Details

>> Traffic Data Collection

The collection of traffic data helps manage traffic signals and provides more efficient signal adjustments based on real traffic data. Traffic authorities can use real-time data to better understand current road conditions and enhance dynamic green light management, which can greatly reduce vehicle idle times. In the morning and evening rush hours, signal times can be adjusted according to actual conditions to provide more time for vehicles on busier roads.

>> Adaptive Signal Control

The traffic flow camera detects vehicles in pre-defined lanes and sends the length of vehicle queues to the controller through an Ethernet connection. The controller then gets triggered and automatically improves signal timings.

Traffic Flow Camera   Traffic Controller   Traffic Light

Real Time Data Collection
Intelligent detection of vehicle queue length.

Evaluation and Timing Improvements
After receiving data from the camera, the controller then gets triggered and automatically improves signal timings.

Signal Timings Updated
The traffic light automatically extends its signal interval.

• Features and Benefits

Interconnecting previously uncoordinated or pre-timed signals and providing newly optimized timing plans and a central master control system can result in travel time reductions of 10-20 percent.

- Reduces number of stops.
- Reduces travel times.
- Lowers fuel consumption.
- Lowers costs.

PRODUCT SHOWCASE

All-in-One Enforcement Camera

- GS-CMOS image sensor
- 4096 × 2824@50fps
- Video compression standards: H.265/H.264M/H.264H/H.264B/MJPEG
- Integrated design, IP66. 850 nm IR illumination

6-lane Speedometer

- Built-in advanced AI algorithm that realizes the intelligent recognition
- Event detection of a variety of activities such as speeding and driving slow
- Intelligent recognition of vehicle color, model, plate number, speed and more
- Detection of up to 64 target vehicles at the same time
- Equip with 24 GHz high-precision radar, two 9MP camera and storage

Parking Detection PTZ Camera

- 1/1.8" 4MP CMOS
- IR distance up to 500m
- Powerful 40x optical zoom
- Automatically captures pictures of illegal parking events
- Built-in ANPR engine, equipped with deep learning algorithm
- Supports multiple tour modes to improve capture efficiency

Signal Detector

- Connects up to 20 red light signal channels
- Supports red light detection mode and green light detection mode switch
- Live upload of signal status data

Edge Storage

- Supports 12-channel HD video and image input
- Composite images in ANPR composite mode
- Performs section speed measurement
- Images can be searched for by event and status
- Offers GPS and 4G

Strobe Lamp

- Supports adjusting the brightness from 1 to 20
- Supports configuring the pulse width of the flashlight as 0ms to 3ms
- Lens Illuminating Angle: 10°× 30°

PRODUCT SHOWCASE

Flash Lamp

- High performance Xenon flash lamp
- Illumination Distance: 16m-20m
- Recycle Time: ≤60ms

Radar Detector

- One single radar covers up to 32 vehicles of 1–4 lanes
- Precisely detects vehicles when they are 18 m–35 m
- Either installed over the lane or at the side of a lane
- Detection of illegal lane change & wrong-way driving
- Speed Measurement Range: 10 km/h–250 km/h

4-lane Portable Speedometer

- 4 lanes speed and event detection
- Built-in 24GHz radar, camera(16MP), storage(1TB), light, 4G
- Speed Range: 5 km/h to +300 km/h
- Radar Range: 18 m–80 m
- Supports ANPR, vehicle metadata, speed, wrong way

CyberCity Platform

- New design interface, better experience, based on Linux
- High Reliability. Supports hot standby for master server
- High Capability. Connects third-party devices via standard ONVIF protocol
- Passing record search and violation
- Section violation management
- Traffic incident management
- Easy docking with third-party system

Traffic Controller

- 3 output boards, supporting 36 channels
- Supports configuring start sequence
- Display and control through LCD screen
- Reversible lane control, suitable for reversible lanes
- Connects to traffic enforcement cameras, coils, pedestrian buttons and more to collect traffic flow data and offer integrated solution of signal control
- Update through network, USB, or TF card

Traffic Flow Camera

- 1/1.8" 4 MP starlight CMOS sensor.
- H.265 and H.264 dual codec.
- Maximum resolution: 2688 × 1520@25 fps.
- Built-in 10 mm–50 mm motorized vari-focal lens.
- The maximum illumination distance is 30 m.
- IP67 rated.

SUCCESS STORIES

Taking video-centric AI technology as its core, the Dahua Smart Traffic Management Solution deeply integrates with traffic management tasks to enhance traffic control and command operations capabilities. This solution fully empowers traffic management reforms and assists traffic management departments in building a "4-in-1" modern service mechanism led by intelligence research, efficient flat command operation, precise maneuvering, as well as real-time supervision and control. It drives the transformation of traffic management mechanisms and improves traffic management capabilities.

28th ASEAN Summit Traffic Project, Laos

During the 28th ASEAN Summit, Dahua Technology assisted Laos in building an intelligent traffic management system. The company helped achieve effective control of vehicles entering and exiting the core areas of the summit. With detection system in place for over speeding, red light violations, etc., it effectively reduced local traffic violations and ensured safe travel.

Traffic Enforcement Project, Serbia

Dahua Technology has successfully deployed smart traffic systems in 5 important cities in Serbia since 2015. This solution solved light pollution problems and developed Serbian and EU multi-country license plate recognition algorithms to control the vehicles entering and leaving EU countries. It also includes a customized collection, transmission, storage and management mechanisms for the Serbian traffic system.

Ulaanbaatar Traffic Project, Mongolia

Dahua Technology provided a sophisticated ITS solution consisting of ANPR system, violation detection and speed measurement systems to cover 28 roads and 8 intersections in Ulaanbaatar. The requirements analysis, solution design and project delivery only took three months to complete, overcoming the challenges of extreme climate conditions and lack of technical support. This solution provided the local transportation department of Ulaanbaatar with a sustainable, growing, and well-maintained security system.

ENABLING A SAFER SOCIETY AND SMARTER LIVING

Dahua CEE & Nordic
Tel: +48 223957400
Email: dh.cen@dahuatech.com

Dahua Technology Poland SP.ZO.O
Tel: +48 223957400
Email: biuro.pl@dahuatech.com

Dahua Technology SRB D.O.O
Tel: +38 1 (11) 4429999
Email: dh.srb@dahuatech.com

Dahua Technology Denmark Aps
Email: Nordic.ne@dahuatech.com

Dahua Technology Hungary LTD
Tel: +36 17899852
Email: sales.hu@dahuatech.com

Dahua Technology Bulgaria EOOD
Tel: +35929950013
Support: support.bg@dahuatech.com

Dahua Technology SRL
Email: marketing.ro@dahuatech.com

Dahua Technology Czech.s.r.o.
Tel: +420 225 986 001
Email: admin.cz@dahuatech.com

Dahua Guvenlik Teknolojileri Sanayi ve Ticaret A.S.
Email: sales.tr@dahuatech.com

Dahua Technology Middle East FZE
Email: info.me@dahuatech.com

Dahua Technology Mexico S.A. DE C.V.
Tel: +52 55 67231936
Email: sales.mx@dahuatech.com
Support: support.mx@dahuatech.com

Dahua Technology Colombia S.A.S.
Tel: +57 6013106176
Email: marketing.co@dahuatech.com
Support: support.co@dahuatech.com

Dahua Technology Perú S.A.C
Tel: +511 500-8555
Email: sales.pe@dahuatech.com
Support: support.pe@dahuatech.com

Dahua Technology Chile SpA
Tel: +56 232705421
Email: sales.cl@dahuatech.com
Support: support.chile@dahuatech.com

Dahua Technology Argentina S.A.
Email: project.ar@dahuatech.com

Dahua Technology Panama S.A.
Email: sales.pa@dahuatech.com
Support: support.pa@dahuatech.com

Dahua Brazil
Tel: +55 11 32511871
Suporte Técnico: suporte.br@dahuatech.com
Vendas: comercial.br@dahuatech.com

Dahua Technology USA Inc.
Tel: +1 (949) 679-7777
Email: sales.usa@dahuatech.com
Support: support.usa@dahuatech.com

Dahua Technology Canada
Tel: +1 877-606-1590
Email: sales.usa@dahuatech.com
Support: support.usa@dahuatech.com

Dahua Europe BV
Tel: +31 (0) 85-0715700
Email: sales.benelux@dahuatech.com
Support: support.benelux@dahuatech.com

Dahua Iberia, S.L.
Tel: +34 917649862
Email: sales.iberia@dahuatech.com
Support: support.iberia@dahuatech.com

Dahua Technology Italy s.r.l.
Tel: +39 02 99912900
Email: info.italy@dahuatech.com
Support: support.italy@dahuatech.com

Dahua Technology GmbH
Tel: +49 211 2054 4120
Email: sales.de@dahuatech.com
Support: support.de@dahuatech.com

Dahua Technology France
Tel: +33 (0) 1 48 53 70 53
Email: sales.france@dahuatech.com
Support: support.france@dahuatech.com

Dahua Singapore
Tel: +65 65380952
Email: sales.sg@dahuatech.com

Dahua Malaysia
Tel: +60376620732
Email: sales.my@dahuatech.com

Dahua Indonesia
Tel: +6227893330
Email: sales.id@dahuatech.com
Support: support.id@dahuatech.com

Dahua Australia
Tel: +61 290306000
Email: sales.oc@dahuatech.com

Dahua New Zealand
Tel: +64 09 2823467
Technical Hotline: 0800 854 857
Email: Dahua_NZ@dahuatech.com

Dahua Philippines
Email: Dahua_Philippines@dahuatech.com

Dahua Russia (Dahua Technology Rus LLC.)
Tel: 8 (800) 707-67-66
Email: info.ru@dahuatech.com

Dahua Kazakhstan (Dahua Technology Kazakhstan LLP)
Tel: +7 727 3110838
Email: sales.kz@dahuatech.com

Dahua Uzbekistan (OOO "Dahua Vision")
Tel: +998 781488666

Dahua Technology Ukraine Office
Tel: +380674011526
Email: dahua.ukraine@dahuatech.com

Dahua Technology UK Limited
Tel: +44 (0) 1628 613 500
Email: sales.uk@dahuatech.com
Support: support.uk@dahuatech.com

Dahua Technology South Africa (Pty) Ltd | Head Office
Office Line: +27 10 593 3242
WhatsApp Business Help-Line: +27 84 072 9260
Toll-Free Help-Line: 080 099 0064
Email: sales.za@dahuatech.com
Support: support.za@dahuatech.com

Dahua Technology Nigeria Representative Ltd.
Email: Westafrica@dahuatech.com

Dahua Thailand
Tel: +66 2541 5188
Email: info.th@dahuatech.com

Dahua Republic of Korea
Tel: +82-2-6486-8889
Email: sales.kr@dahuatech.com

Dahua Vietnam
Tel: +84 24 3202 6616
Email: DH_VIET@dahuatech.com

Dahua Technology Japan
Tel: +81-3-6661-6818
Fax: +81-3-6661-6857
Email: Dahua_Japan@dahuatech.com

Dahua Technology India Private Limited
Tel: +91 124 4569100
Email: sales.india@dahuatech.com

*Design and specifications are subject to change without notice.

DAHUA TECHNOLOGY

Add: No.1199 Bin'an Road, Binjiang District, Hangzhou, China. 310053
Email: overseas@dahuatech.com
Website: www.dahuasecurity.com

YouTube   LinkedIn   Partner App   Website