

Mobile ANPR



Mobile Automated Number Plate Recognition Solution

Introduction

Technological advancements in the law enforcement field have greatly impacted the way in which law enforcement agencies do business. Innovations that led to the use of narrowband and broadband radio communications, handheld fingerprint readers, computer forensic software, and digital in-car video systems continue to simplify and automate many core legacy processes in the field of law enforcement. License plate inspection is one of the fundamental tasks of a law enforcement patrol officer. Advanced technology is now in place to greatly assist officers with the license plate checking process.

Automated Number Plate Recognition (ANPR) technology automates a core law enforcement process that has traditionally been left to the interaction of law enforcement officers in the field and law enforcement dispatchers in a communications center. Officers no longer need to communicate license plate numbers to dispatchers via law enforcement radios or to type them into their mobile data terminals to check the plate against various databases. Proven license plate recognition technology exists to automate the license plate checking process and thereby increase the efficiency and accuracy of law enforcement agencies worldwide. The ANPR solution is a fundamental component of Vlatacom Safe City solution.

A few of the possible applications of the ANPR system are:

- detection of stolen vehicles
- detection of stolen license plates
- detection of vehicles with an expired insurance policy
- detection of vehicles whose owners have unpaid fines
- detection of vehicles owned by wanted persons

The most efficient implementation of these applications is within a mobile environment.



Easy adjustment

Camera sets are attached to the vehicle with strong magnets and rubber patches.

Mobile ANPR System Configurations

The Mobile ANPR system is a concept involving the installation of ANPR cameras onto a law enforcement vehicle. ANPR cameras are mounted on a vehicle roof top, enabling the detection of license plates in a wide range of situations.

Typically, ANPR cameras (up to four) are securely attached to the vehicle roof, at the appropriate angle sufficient for capturing license plate numbers in parking areas and in different lanes. Cameras are attached by strong magnets and rubber patches, without any physical harm to the vehicle's body.

This enables officers to easily mount and dismount cameras from the vehicle.

The ANPR system also includes the ANPR processor (installed in the vehicle's trunk), a rugged laptop with a touch screen (mounted to be within reach of the officer on patrol) and appropriate software. The Mobile ANPR system uses communication equipment installed inside of the patrol vehicle to send queries and receive responses. It also performs checks against locally stored watch lists.



Benefits

Application of the system increases work efficiency and accuracy and while reducing the costs of operation.

Adaptability

Various hardware and software options can be implemented to perfectly fit a client's needs.

Customizable Solution

The Mobile ANPR system's hardware and software components are easily capable of being customized. Hardware can be customized by having a variable number of camera sets and different camera set positions. Camera sets can further be customized by excluding the color overview camera if evidence images are not needed. It can also be customized by implementing various data and voice transfer communication options.

While the core software remains the same, end-user interfaces are highly customizable. The user interface's graphical layout can be modified according to user needs. Also, Vlatacom can customize software communication interfaces for integration of the mobile ANPR system within existing systems and databases.

Training

Vlatacom provides training that includes in-depth explanations about equipment components, implementation, and maintenance, while also covering problem solving strategies and providing support regarding the use of the new components. Training content and its duration can be customized in accordance with the customer needs and requirements.



Mobile Office

The system installed in the vehicle, together with the radio station and communications equipment, transforms a patrol vehicle into a mobile office. It enables an officer to easily perform all necessary field activities along with accompanying administrative tasks.

This includes:

- performing queries on a suspect's vehicle
- performing queries on a suspect
- raising alarms
- generating activity reports
- generating individual event reports



The vehicle interior is designed to increase officer productivity by enabling him/her to react promptly in any situation.

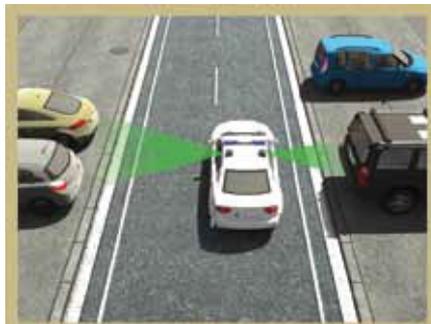


Mobile ANPR System Usage Scenarios

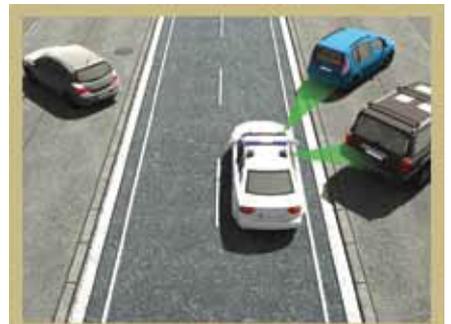
ANPR cameras can be used for reading vehicle license plates in several different modes:

- perpendicular parked vehicles on one side of the road,
- perpendicular parked vehicles on both sides of the road,
- angle parked vehicles,
- parallel parked vehicles,
- in traffic, in front of the patrol vehicle,
- in traffic, behind the patrol vehicle,
- in traffic, in the adjacent lane approaching from the opposite direction.

The user has to mount the ANPR cameras in the desired direction in order to achieve the desired mode of operation.



Perpendicular Parked Vehicles



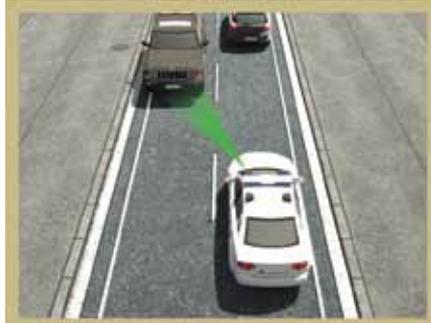
Angled Parked Vehicles



Parallel Parked Vehicles



In Traffic Vehicle Behind



In Traffic Adjacent Lane



In Traffic Vehicle in Front

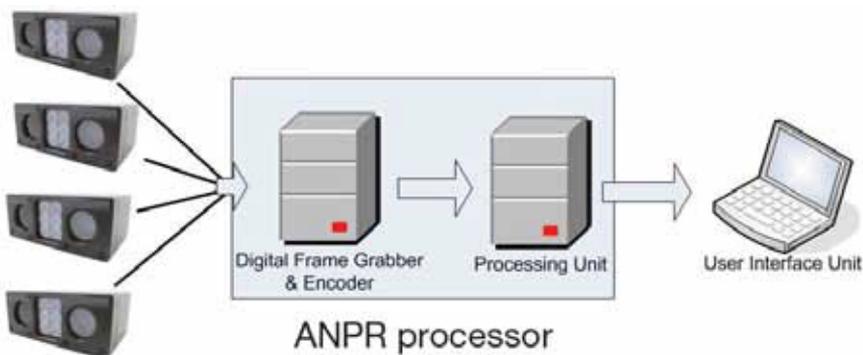
Modular Solution

The system's configuration can be altered to fit any traffic environment.

Hardware Technical Details

The system consists of up to four camera sets that are mounted on top of the car, a digital frame grabber and encoder, the main processing unit, and a user interface unit.

Camera sets are mounted on the car's roof. A single camera set is composed of two cameras (one monochrome, one color) and an illuminator. Images from the monochrome camera are used for license plate detection and recognition, while the images from the color camera are used only for evidence. A digital frame grabber collects video streams from all the cameras in the system (both monochrome and color) and provides digital images for processing purposes. The entire image processing task is executed in the main processing unit.



The main processing unit is designed specifically for the in-vehicle environment. It has an intelligent power supply that monitors the vehicle's battery to protect against deep discharge, integrates with the vehicle's ignition to provide programmed start-ups and shut-downs, and supports OS stand-by and hibernate modes. The processor is powerful enough to analyze 240 frames per second (from all the cameras combined). It has various connectivity options (3G, GPRS, Wi-Fi, serial, USB, Ethernet) and additional features (e.g. GPS). An in vehicle TETRA radio station can be used for data transfer. The main processing unit is equipped with a shock-mounted internal hard drive which is able to operate even while driving over rough terrain. The digital frame grabber and main processing unit are mounted in the vehicle's trunk so that they do not interfere with normal vehicle operation. The user interface unit is mounted adjacent to the car dashboard so that the officer can access it easily. It is equipped with a touch screen display that enables the officer to react quickly to any event detected by the system.

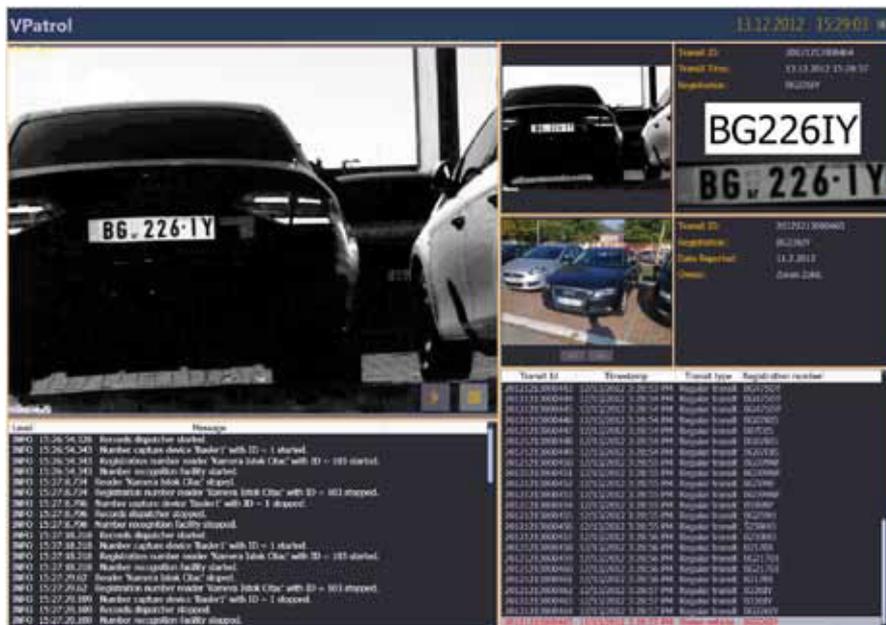


The ANPR processor's small size leaves most of the trunk space available for normal usage.

Software Technical Details

There are two main software components in the system:

- ANPR processing software, including
 - License plate detection
 - Optical character recognition
 - Event/alarm generator software
- Client software
 - Event and user management software
 - Watch list importing and data synchronization
 - Connection with external databases
 - Graphical user interface for control and overview



ANPR processing software provides highly accurate detection and recognition of license plates, fast comparison to vehicle databases or watch-lists, and generation and storage of events and alarms. It can detect and recognize license plates with an infrared reflective coating. Character recognition is optimized for each user defined character set. The configuration of this software is done by Vlatacom technicians.

Once configured, the system can operate without further adjustments from our technical personnel.

Client software is designed specifically for the law enforcement usage and can be further customized to fit a client's needs. Watch-lists can be used in off-line or on-line mode. While in on-line mode, the most up-to-date lists are available to the system, but this mode requires constant connection with the central system. When this connection is not available the system automatically switches to off-line mode. When the system is in off-line mode, lists are updated periodically (at the beginning of the shift). Lists of interest can be imported from any source and in any format. List updating can be done automatically or manually. Data collected during system operation can be synchronized off-line (at the end of the shift) or on-line if the connection is available. The data format can be arranged to conform to an existing clients' systems. The graphical user interface is designed to provide efficient and fast overview and control for the officer.



GPS Alarm Location

The system is able to include the location of the detected license plate from the generated report presented on a map if a GPS positioning and mapping system is present in the patrol vehicle.

VLATACOM - A reliable partner

The Vlatacom Mobile ANPR system is an efficient solution for all scenarios and applications which require reading vehicle license plates. Its intuitive and intuitive interface improves the productivity of officers on patrol. Implementation of the system cuts the total operational costs incurred by police units.

Vlatacom experience

Since the establishment in 1997 Vlatacom delivered various solutions to numerous clients. Vlatacom has policy to permanently improve professional skills and knowledge of its employees. This provide Vlatacom with ability to successfully and professionally integrate complex solutions in the area of information and communication technologies, biometrics, security and telecommunications.

Custom solutions

Vlatacom provides strategy, technology, processes and personnel for optimization of solutions in accordance your needs and requirements. Simple integration into existing systems gives you opportunity to always keep the complete solution under control. Provided solutions are modular, scalable, customizable and adjustable to local culture (language, alphabet)



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