SAFE AND SMART CITY SOLUTION

with Logipix System

www.logipix.com
Half of the world’s population today lives in cities. These modern urban areas are constantly growing both in size and population, attracting a large number of daily commuters. With their skilled professionals and investments, cities contribute significantly to GDP and are thus vital to their country’s economy. On the other hand, today’s growing cities face many challenges. The cities that implement smart solutions to solve their challenges are proud to call themselves smart cities.

The Logipix end-to-end Safe and Smart City solution provides an answer for these urban security issues. The solution was designed to help cities achieve a sustainable, liveable environment through smarter urban traffic and safety management.
Logipix takes a comprehensive approach to traffic and city security that helps authorities in incident prevention and reaction, and makes law enforcement procedures more effective. The hardware and software components that work together form a reliable and efficient system with multiple purposes.

The Safe and Smart City end-to-end solution covers the entire process and monitors all public areas, streets and roads of a city.

Logipix Traffic violation management

As mobility is the key to development, connecting people and places fast and safe is vital for a smart city. The Logipix Safe and Smart City solution provides efficient traffic surveillance, making it possible to detect all traffic violations and have a better control of the traffic.

Logipix Traffic violation management components

- Wide dynamic range Logipix ONE 20 MP cameras with 20 FPS, using JPEG2000 compression
- Integrated IR Flash
- Outdoor Network Video Recorder
- Integrated multi-lane radar / LIDAR for speeding
- Server cluster with dedicated application servers
- Oracle RDBMS
- ANPR interface
- Interface for external vehicle database and customer-managed lists
- Violation Management Client (VMC)
The 20 MP Logipix ONE surveillance cameras installed at intersections are able to monitor multiple lanes 24/7. The cameras provide 20 FPS at full resolution. This high FPS rate helps the system accurately track the position of the vehicles.

Thanks to the synchronized IR Flashes the camera has excellent performance at night as well. Both reflective and non-reflective license plates can be detected, as the IR Flashes work with different flash powers.

The Outdoor Network Video Recorder (Outdoor NVR) performs continuous onsite recording and video analysis to solve network issues.

The system uses the wavelet-based JPEG2000 compression standard, which makes it possible to provide the highest quality images while remaining bandwidth-effective.

To detect violations, the system relies on the high-resolution Logipix camera images. An integrated radar also helps detect speeding. The automatic Video Content Analysis (VCA) module embedded in the Logipix NVR is capable of automatically detecting all common traffic violations based on the camera images.

The VCA automatically detects traffic violations and creates a log. This contains all information that helps find the key image, along with four further relevant images, associated with the violation. Based on this log, the server downloads images, crops the license plate of the vehicle and sends it to the ANPR. Once the server receives the recognized license plate number, it can get further vehicle and owner data through optionally connected country-specified interfaces. The collected data is then compiled in a violation package that contains all relevant images of the traffic violation and all important vehicle data.

**Automatic Traffic VCA applications**
- Speeding detection
- Stop sign violation detection
- Red light violation detection
- Bus lane violation detection
- Wrong-way violation detection
- No left turn violation detection
- Parking violation detection
- Traffic counting

**Violation detection**

**Violation package**

The VCA automatically detects traffic violations and creates a log. This contains all information that helps find the key image, along with four further relevant images, associated with the violation. Based on this log, the server downloads images, crops the license plate of the vehicle and sends it to the ANPR. Once the server receives the recognized license plate number, it can get further vehicle and owner data through optionally connected country-specified interfaces. The collected data is then compiled in a violation package that contains all relevant images of the traffic violation and all important vehicle data.
Violation Management Client

After all information is gathered, the violation package can be reviewed, declined, confirmed or sent for further investigation in the Violation Management Client (VMC). Logipix developed the VMC for the convenient management of traffic violations, making evaluation processes more convenient. If a violation is confirmed the system creates a violation report that can be used later in law enforcement procedures as irrefutable evidence. This not only facilitates law enforcement procedures but also reduces accident rate. If drivers know that their actions have legal consequences, they are more likely to comply with traffic rules.

The Logipix City Video Surveillance

Modern cities experience higher criminal activity, and they are also more prone to be the targets of terrorist attacks. Cities need a strategy for handling suspicious and dangerous incidents, as the utmost goal is to achieve public safety. Cities must make use of technological advances to reduce risks and potential threats. Logipix can help smart cities by making prevention and reaction to threats possible and efficient.

Logipix City Video Surveillance components

- Wide dynamic range 40 – 200 MP Panorama cameras with 20 FPS FPS, using JPEG2000 compression
- Wide dynamic range 20 MP Logipix ONE cameras with 20 FPS, using JPEG2000 compression
- Day/Night 6 MP PTZ cameras
- Logipix Network Video Recorder
- Firebird Database Management
- Extendable segmented server modules
- Control Center software
- Safe policeman feature
- PPM expansion
- PTZ zoom functions
- Interface for face recognition systems

Traffic counting

The quality footage provided by high-end Logipix cameras also makes image-based traffic counting possible, so there is no need to install expensive inductive loops. The application can count crossing vehicles in multiple lanes. Based on this data, operators are able to control traffic lights and manage traffic flow. This results in fewer traffic jams and smooth traffic flow.
The high-resolution Logipix cameras employed for traffic surveillance can be used during the video surveillance procedure of cities as well. Our 200 MP Panorama and the 6 MP PTZ cameras of the Logipix Safe and Smart City solution are specifically created for the surveillance of wide areas. The devices can cover large, crowded areas and provide high-resolution, quality footage that makes face recognition possible. The cameras can operate at night as well. Using different NVRs, both onsite and remote recording are possible.

Video Management Software

The large panoramic images are easy to handle with a spatially developed video management software, the Control Center. It is also possible to search and play back archived recordings, which is useful in later law enforcement procedures requiring incident footage. Video surveillance is therefore much more simple and efficient with the Logipix system.

Features and functions

Video surveillance is the main purpose of the city surveillance system. The system incorporates intelligent zoom functions to make surveillance even more effective by directing the operators’ attention to critical situations. This makes the video surveillance procedure easy and more automated.

System architecture

Smart ideas are born everyday. Logipix makes sure to apply these ideas on the streets of the city. The Logipix Safe and Smart City solution offers end-to-end traffic violation management and video security surveillance. It provides 24/7 operation and covers the entire workflow from monitoring to providing irrefutable evidence for further law enforcement.
The Logipix PPM expansion

The Logipix pixel per meter (PPM) expansion allows the predefinition of priority areas and the ability to monitor them with a higher PPM value. These priority areas are observed by a Logipix ONE camera that allows operators to continuously monitor this area at an even higher resolution. The image with higher PPM is synchronized with the panoramic image for an even more convenient surveillance procedure.

Safe Policeman feature

There could be many dangerous situations when a policeman or a security guard needs extra help to get a fuller picture of the situation he is involved in. With this smart feature, the person who is in trouble can press a button triggering an event in the Control Center. Based on the GPS coordinates, the PTZ cameras turn to the area so that operators can see the situation clearly and give instructions or send help.

ePTZ function

Define areas on the panoramic image to have a Logipix PTZ camera automatically turn and zoom to these areas when trigger events happen. The zoomed area of the panoramic image is displayed in a special zoom window.

The Logipix Safe and Smart City solution was created to fulfill multiple roles. Its two parts form a whole and cover a city's entire traffic and city surveillance. With Logipix, even the largest cities can monitor all their roads and public spaces efficiently. This approach meets modern security challenges and makes way for development and progress.
• The Logipix Safe and Smart City Solution does more with less resources. It is designed specifically to fulfill multiple video surveillance tasks at the same time.
• The system can meet all the requirements of individual cities.
• The Logipix engineering team develops leading-edge new technologies with a long lifetime for your city to always stay one step ahead.

• We design cameras with resolution up to hundreds of megapixels for you to have the best quality video footage in all lighting conditions.
• The Logipix VCA applications make it possible to automatically capture all common types of traffic violations and to effectively react to all suspicious activities in cities.
• Logipix developed efficient server and client software components to maximize the throughput of evaluated traffic violations and to fulfill the diverse and complex tasks of video surveillance.
• Our devices are developed and manufactured to operate without failure even in extreme outdoor environments and conditions.
• The whole installation is uncomplicated.
• As the high-resolution Logipix cameras can replace dozens of low-resolution cameras, the system does not spoil the cityscape.

• Maintenance and expansion is easy with the flexible Logipix system. The Logipix Safe and Smart City is therefore the best solution for cities which are planning for the future.
• All of the above make the solution quality and cost-effective at the same time.
Logipix Safe and Smart City projects around the world
As we have seen, the expanding cities of the world need to plan for the future. If they do not develop their infrastructure, or their security systems lack proper automation and control, they are likely to remain stuck in the past.

The future of cities lies in taking a holistic approach that makes communication and action fast and efficient. The security-conscious cities that chose the Logipix solution improved their safety management and increased the security of their roads and public spaces.

Thanks to the Logipix Safe and Smart City solution, authorities are able to prevent and quickly respond to violations and operate more effectively while remaining cost-effective. Citizens now can live in safer neighborhoods, walk on safer streets, and drive on safer and faster roads.
ABOUT LOGIPIX

Logipix Technical Development Ltd. is a privately held-company established in 1996 in Budapest, Hungary. Since then, Logipix has grown into the international company that it is today – one of the most innovative developers and manufacturers of end-to-end video solutions. Today the main profile of the company is to provide specially designed, high-end video surveillance solutions considering the various characteristics of different application areas.

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