

# Application of network video cameras in cities

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Network video cameras are currently used in multiple cities around the world for traffic monitoring, surveillance and meeting security needs. These systems have replaced, to a large extent, the closed-circuit analogue television (CCTV). Notwithstanding the above, the role played by these teams in relation to improving the functioning of smart cities and the way in which people live, travel and work both in the present and in the near future, will be fundamental. Uses range from the implementation of information systems - cameras become an essential component of an operations center for a variety of services related to security, energy, health, transit and transport - to sustainable urban planning through environmental solutions that monitor air quality, noise levels and UV radiation.

Network cameras can also allow innovative applications for commerce, entertainment and tourism, especially when combined with mobile and location technologies. These are some of the examples of the possibilities of the technologies of videovigilancia applied in the smart cities:

Virtual cities with real-time 3D maps: Tourists and citizens alike want to know about the events, traffic inconveniences, and thus avoid the most saturated areas. The models of three-dimensional virtual cities that are delivered to mobile phones could provide information in a practical way, in real time. The advanced software that the cameras integrate with the augmented reality technology, can generate a 3D map with several layers of live data, including video. The application areas of these "live" maps can range from security and protection to industrial, health, educational, entertainment and advertising purposes.

**Better communication with citizens:** Cities have to keep the population updated on what is happening. For this, they need smarter tools to communicate with citizens in case of potential threats that may arise in certain areas. With screens installed in the main points, such as plazas or train stations, and through the information transmitted by the network cameras, the authorities can show important messages that alert people and give guidance on the best actions to take.

**Improve the satisfaction of the population:** For many people, the smartphone has become a basic tool for day-to-day communication. A mobile application with GPS-based location information could allow citizens to report defective or inefficient services at the time such as full trash bins or street lights / lights that are broken. City authorities can verify reported problems using their network of installed video cameras and decide the best and fastest way to solve the problem.

**Making the most of social networks:** Social networks are already crucial sources of information for police forces, the media and users in general, especially during any incident that is occurring. Once the city authorities have been alerted of an event through social networks, the network video systems allow to collect the visual information instantaneously, locate the problem, monitor the situation and verify its importance. Ultimately, combining the content published on social networks with data from cameras, smart sensors and other IT applications, allows authorities to take advantage of big data to better understand what is happening on a day-to-day basis and provide the answer ideal.

Tracking and searching for lost objects: The keys, wallets, telephones, computers and bicycles are among the items that are commonly lost in a city every day, either because their owners lose them or because they have been stolen. Undoubtedly, citizens and the police would benefit from a system capable of tracking these objects using sensors and GPS technology. The cameras can provide the necessary video support and allow the police forces or city officials to conduct a more detailed investigation.

Remote security for pedestrians: The streets or parks at night can be potential risk areas. To protect citizens in situations where they have to travel through these areas, and make them feel more secure, the authorities could offer a mobile application that connects users directly from their smartphones to the city's surveillance system. The integrated alarm function generates a direct link with the police. In addition, the combination of location data and cameras with intelligent lighting allows authorities, from the control room, to track citizen movements and actions and escort them safely through potentially dangerous areas.

Reduce workplace accidents: Video surveillance systems can be used to monitor construction sites, roads and other work environments, in order to prevent accidents and prevent unauthorized access. They can also determine the security conditions of a site and activate alarm signals when a worker has a suspicious behavior.

Vehicle parking management: Finding a parking space in a crowded area of the city can be a nightmare. A system based on network cameras, video analysis and auto counting can provide reliable updates on available parking

spaces. The information can be delivered to drivers through a mobile application, which can also calculate the fastest route to a parking spot through the person's current location. The same configuration can be used to manage sites for the disabled and that the routes of passage are free so that they can access the places.

In conclusion, there are many more areas of application for video surveillance solutions when they are connected to other sensors, information systems and data analysis tools as part of a smart city network. While they will always play an important role in crime prevention, infrastructure protection and effective response to emergency situations, it may be time to think differently and find new ways where they can make a significant difference to quality of urban life.