Safe cities.

Case study book

Your city can't be safe if you can't see it. Your city can't be smart if it isn't safe.

While a "smart city" means slightly different things to different people, one thing everyone agrees on is that smart cities use digital technologies to improve the quality of life of the people who live in them, reduce environmental impact, and make everyday services run smoothly. Another thing is that a safe city is an important cornerstone of a smart city.

Stories of safe cities.

On the following pages, we share stories from cities like yours – from Asia to Europe to North and South America and more. They're stories of cities that have experienced first hand the benefits of working with Axis and our global network of integrators to make their citizens and their infrastructure safer – and smarter.

We hope you find our stories inspiring and assuring.

And we hope when you've finished reading them that you'll visit **www.axis.com/safecities** to learn more about how together we can create your own story of a safe city.

"The integrated surveillance system has helped to increase the Police efficiency and ensure better safety and security for our citizens."

K. P. Bakshi, IAS, Additional Chief Secretary (Homes),
Maharashtra Mantralaya, Mumbai.

Axis video surveillance helps Kolhapur become a Safer City.

Smart, connected solution enable real-time tracking of crimes, better governance and civic administration.

Organization:
Kolhapur Municipal Corporation

Location:
Kolhapur, India

Industry segment:
City surveillance

Application:
Remote monitoring, disaster prevention, situational awareness

Axis partner:
Samarth Security Systems (India) Pvt. Ltd.

Mission

Kolhapur, known as a city of palaces and gardens, is a historic Maratha city. Located close to Mumbai, it is rapidly becoming a major tourist attraction. The need to address various concerns of crime management, traffic control and planning, better governance and efficient disaster management was recognized early by the Kolhapur Municipal Corporation. The requirement of an efficient and integrated security surveillance system was the need of the hour. This would enable the Kolhapur Police and the civic authorities to reduce the possibilities of a security threat and ensure better safety across the city.

Solution

A smart solution was provided that could observe all entry/exit points, traffic junctions and important tourist attractions around the clock. The plan was to transform Kolhapur into a safe city project and ensure quicker response times and faster access to evidence in case of law violations.

In Kolhapur (area of 66.82 km), an installation at 65 locations was made with 165 network cameras. These include 116 fixed cameras, 17 PTZ cameras and 32 panoramic cameras.

Result

The solution has been successful in ensuring the safety and security of Kolhapur, making it into a smart, connected city. It has helped law enforcement authorities to better manage traffic, for real-time tracking of crimes and has enabled better governance and civic administration. The Axis surveillance solution has also been able to help the police monitor festivals and man VIP movement in the city and build a security net for its citizens. Petty incidents like traffic violations and theft will not pose a serious challenge to the authorities as they can always refer to video footage.

Implementation

The Kolhapur Municipal Corporation (KMC) project was executed under the able guidance of advisory consultant Mr. D. Sivanandhan, IPS rtd. (Former CP, Mumbai and DGP, Maharashtra) and leadership of current SP Mr. Pradeep Deshpande, KMC commissioner and Mr. P. Siva Shankar. Due to the continuous monitoring of city engineer Mr. Netradeep Sarnobat, the project was implemented successfully, however initial conceptualization was made by then SP Dr. Manoj Kumar Sharma, now DCP Zone -1 Mumbai police.

Smart monitoring and future vision

Overall, Kolhapur Municipal Corporation and Kolhapur Police have not only succeeded in securing the residents, but also in improving the city's civic situation and administration. It has assisted the local bodies to monitor law and order during processions, VIP movements and festivals and also improved the overall operational efficiency and reduce manual intervention. The cameras are viewed at the Command and Control Room on 12 (42 inch) LED Monitors. All these camera feeds which are viewed on the LED display are stored in the server storage. Further two client workstations have been provided to control all the cameras at the control room.

The solution also included:
> Efficient backbone design by using, 24/12/6 core OFC Ring Topology which provides (85% - 90%) Path Redundancy thereby providing high uptime even after cable breaks due to natural calamity or accidents
> Industrial Grade Switches have been used at the field sites (up to 75C) thus giving workability in very rough conditions to withstand high temperatures and dusty environments
> Network Management Software for monitoring, critical routes rope wire will be used for less anticipated breakages and maintenance at junctions where KMC ducks are used – leading to huge savings in cost

The next phase

There are plans of implementing the next phase of the project which will include E-Challan/M-Challan, Dial 100, Intelligent Traffic Management System, Flood Sensors and Seismic Sensors, Face recognition, License plate recognition, Police m-Beat System, Integration of all the above with C-Cube (Command, Control and Communication Center).

Deterrence of crime

The Kolhapur Smart City project uses enhanced and high definition cameras which can monitor the city round the clock. Manually managing and controlling traffic posed serious challenges to local policemen in the past and this has been duly corrected with alarms. The SOP's are available in Marathi which has also helped the operators to adapt quickly and integrate with the system.

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Axis joins the Queen City's guard.

Cincinnati Police Department embraces smart security technology to improve public safety.

Organization:
Cincinnati Police Department

Location:
Cincinnati, Ohio, USA

Industry segment:
City surveillance

Application:
Law enforcement, public safety, city operations

Axis partners:
Federal Signal, Genetec, Firetide, Cambium

Mission

Cincinnati, Ohio is an historic American city of 300,000 with a highly developed downtown, diverse neighborhoods and over 20 miles of shoreline along the Ohio River. Working with Federal Signal Corporation, a security and safety systems integrator and Axis partner, the Cincinnati Police Department decided to enhance their operations by installing several analog cameras downtown in 2008. However, in just two years, the CPD decided the analog camera technology was not delivering the image clarity it needed. It decided to retire its analog cameras in favor of more advanced, high-definition network camera technology.

Solution

The CPD asked Federal Signal to design and install a new IP-based, citywide surveillance system comprised of nearly 100 Axis high-definition pan/tilt/zoom (PTZ) managed by Genetec Security Center, the unified security platform which includes the Omnicast video management system.

Most of the critical locations did not have a communications backbone, so Federal Signal, a wireless broadband expert, designed and deployed a wireless streaming solution featuring a secured Firetide mesh network and Point-To-Point licensed backhaul utilizing Cambium PTP 810 microwave transmitters for longer distances.

Result

While the Axis cameras are used to help the CPD deter and apprehend criminals, they also play a vital role in public safety. Cameras monitor the downtown business districts, neighborhoods throughout the city and the riverfront to protect the welfare of residents and visitors to the area. They have been used to rescue boaters on the Ohio River, monitor weather conditions on city thoroughfares and help contain hazardous spills.

Building a comprehensive video solution

Situated on the north bank of the Ohio River, Cincinnati is the third largest city in the state of Ohio. With a police force of 1,000 officers, the Cincinnati Police Department (CPD) is committed to using the best law enforcement tools available to protect residents, businesses and visitors within the city's 77-square-miles.

To provide its officers with additional support, the CPD consulted with other departments and citizens' groups to discuss the benefits of installing cameras in the city. Together, they developed a plan and deployed the first analog video cameras in the downtown business district in 2008. Two years later, the department was ready to expand the coverage into neighborhoods and along the riverfront. At that point, they decided a more advanced IP video solution would deliver far better image quality than the original analog technology.

Immediate incident response

Axis partner Federal Signal recommended high-definition AXIS Q6034-E and AXIS Q6044-E PTZ Network Cameras for the job.

According to Nirmal Chudgar, Director of Business Development/Professional Services for Federal Signal, reliability was a key factor in recommending Axis. "From past experience we knew that Axis technology always worked and technical support would always be there when we needed it," Chudgar said.

All cameras are managed through Genetec Security Center video management system at a sophisticated operations center at police headquarters. The video travels over the City's fiber optic network, as well as by wireless technology. Firetide mesh nodes allowed the City to add Axis cameras in critical areas without wired connections. For longer distances, Cambium Networks' PTP 810 microwave transmitters provided a reliable high bandwidth backhaul for the video traffic.

Highly efficient H.264 compression technology retains HD resolution without overwhelming the mesh network's throughput or consuming excessive data storage. The video is stored for 14 days on a 64 TB Dell Compellent SAN as well as on SD cards inside the cameras for backup.

"When an incident occurs, officers on duty in our Real Time Crime Center (RTCC) can grab control over the Axis PTZ cameras and zoom in for a closer look," said Barry Whitton of the Cincinnati Police Department Technology and Systems Section. The cameras can also be accessed on video walls in the Emergency Operations Center (EOC) and 911 Center during major events.

The readily accessible video allows the CPD to quickly assess situations and determine the most appropriate response. Whitton recalled one instance where the department received a report alleging a fight involving 20 people armed with guns and knives.

"There was a camera right there," Whitton said. "We were able to see, almost as the incident was being dispatched, that the report was not correct. The crowd was small, and there were no guns and no knives."

In 2013, the CPD added the mobile application from Genetec Security Center to push video out to officers in the field. "This has been an especially valuable tool in covert operations and emergency response situations on the streets and along the Ohio RIver," Whitton said.

In addition, the CPD operates a mobile command van that tows a trailer housing lights and Axis cameras mounted on a boom for events in open fields, parking lots or other temporary locations. Whitton stressed that the department is very conscious of the balance between public safety and individual privacy, and they have strict guidelines on who can operate the cameras and for what purpose.

"Everything we do is audited," Whitton said. "We keep close tabs on who has camera access, and we tightly control who has permission to use them and request archived video."

Providing digital back-up on the road and in the water

"Video cameras don't replace police officers in the field, but they do give them another set of eyes," Whitton said. Those extra eyes have been particularly valuable in recovering stolen vehicles. When the Real Time Crime Center gets an alert that a stolen car has passed a license plate recognition camera, an RTCC officer takes control of the nearby Axis PTZ cameras, if available, to follow the car as it drives through the city streets.

"We had one case where we wanted to make a safe, controlled stop to apprehend the car thieves. We didn't want them jumping out of the car and fleeing the scene. We watched the vehicle on the Axis camera and radioed the officers near the scene to execute the stop when the car reached the bottom of the hill."

The CPD also uses Axis PTZ cameras to support maritime security efforts along 25 miles of the Ohio River shoreline. They often share the video with the US Coast Guard and other regional maritime first responders from Ohio, Kentucky and Indiana.

In one incidence, an intoxicated man crashed his car on the Kentucky side of the river and tried to flee by swimming to Ohio.

"I was able to track him as he swam along the shore and direct the police boat where to fetch him out of the water," Whitton said.

Sharing the benefits of public safety cameras citywide

As the system grew, its role evolved from policing crime to enhancing public safety and increasing the City's overall quality-of-life. The CPD shares the real-time video with other city departments, including Fire, EMS and Traffic Engineering. The video has been used to support such diverse efforts as directing first responders during medical emergencies and diesel spills, tracking snowfall on major roadways and charting the progress of highway construction projects.

In addition, the CPD partnered with a major local university, parks, metropolitan housing authorities and a casino to add cameras along the perimeter of their properties to ensure the safety of those heading to and from those locations.

According to Chudgar, "What makes this such a successful public safety tool has been the strong collaboration among everyone involved in this mission critical initiative – our Axis and Genetec technology partners, our wireless broadband vendors, ourselves and the Cincinnati Police Department."

"With this next-generation Axis camera system we are able to make residents feel safe and can respond quickly and efficiently to anything that happens whether it's a crime, an altercation on the transit system, or if we need to identify a suspect."

Francisco Pérez Cárrega, Technology & Logistics Director, City of Vicente López.

Feira de Santana fights violence with high definition images.

Video surveillance project in Bahia involves more than 200 fixed and mobile cameras from Axis Communications.

Organization:
City Government of Feira de Santana

Location:
Feira de Santana, Bahia, Brazil

Industry segment:
City surveillance

Application:
Urban monitoring

Axis partners:
Wimaxi, Digifort, Radwin

Mission

The municipality of Feira de Santana, Brazil, in the state of Bahia and 100 kilometers from the state capital of Salvador, had 18 analog cameras for its population of more than 600,000. The police could not rely on their low-resolution images to solve crimes. Levels of violence in the city were analyzed, including the districts of São José and Humildes, in order to determine which points to include in a new video surveillance system.

Solution

The project was created by Wimaxi, a systems integrator partner of Axis Communications that specializes in digital cities, using radios from Radwin, another Axis partner. The solution uses 106 AXIS Q6034-E PTZ Network Cameras that can pan, tilt and zoom as they monitor intersections and areas that require inspection, offering 360 degrees. It also uses 96 AXIS P1354-E Network Cameras dedicated to monitoring areas with high human traffic flows, such as hallways, bus stations, and entrances to public buildings.

In all, 202 high-definition cameras are managed by software from Digifort, an Axis partner.

Result

The urban security project included 320 radio points linking 150 schools and 28 public health units, and the 122 public broadband hotspot points, making Feira de Santana one of the largest digital cities of the country. The analog cameras were decommissioned.

Optical fiber and radio

For Victor Soares Bezerra, Director of Wimaxi, "the choice of high definition digital cameras is critical in order to generate reliable images that can help identify perpetrators of crimes." All images are accessed by the Municipal Guard and the Civil and Military Police at the Secretariat of Violence Prevention, inside a monitoring center with a videowall.

The transmission of high definition images has been made possible adopting a hybrid network system that combines fiber optic backbone and two pre-assembled radio base stations: one in the city center and another in the hills of São José, located 28 km from downtown – an area lacking electricity – where the station is powered by solar and wind power.

The radios that broadcast the camera images were used for more distant locations, where cabled infrastructure cannot reach. Radios from Radwin's 5000 series (point-multipoint) and 2000 series (point-to-point) were chosen, distributed through WDC Networks.

"The current technology of Radwin radios is different from conventional radios," says Marco Santoro, Director of Business Development at WDC. "Because it is asymmetric, it is possible to split the band as needed. For image transmission, it is possible to put, for example, 8 MB for download, for receiving images, and 2 MB for upload, to control the PTZ controls," he explains. Another advantage is that, with the radios, you can save time and, depending on the distance, cost.

For a second phase of the project, a study is being made for the installation of cameras in other districts and the use of video analytical capabilities, such as license plate recognition and automatic intruder detection in restricted areas. These intelligent systems are already supported by the camera models adopted and can be added to Digifort's video management software.

Heading in a new direction.

The city of Vicente López has installed over 800 Axis cameras in government buildings, along public roads, in mass transit – as well as in patrol cars.

Organization:
City of Vicente López

Location:
Vicente López, Argentina

Industry segment:
City surveillance

Application:
Public safety and security

Axis partner:
Exanet S.A., Anixter

Mission

Vicente López is situated in the northern section of the Greater Buenos Aires area, with a population of approximately 300,000 in an area of about 13 square miles. Thousands of its citizens commute daily to the city of Buenos Aires – and elsewhere throughout the Buenos Aires province – via public transportation or in their own personal vehicles. A sharp increase in commuter traffic over the last few years (Vicente López is serviced by three rail lines and a Metrobus) has created a huge need to modernize and expand the city's video surveillance system that, until 2014, was operating with outdated equipment and was lacking of any sort of integrated technological approach; this made it extremely difficult to provide effective monitoring of its various districts.

Solution

In order to achieve constant monitoring and create a secure environment for citizens, the local government put in place an advanced video surveillance system using Axis IP cameras, with installation by the Argentinian company, Exanet S.A., an Axis partner.

The company replaced outdated analog equipment with an installation of 700 Axis cameras consisting of both fixed and PTZ dome-style models. The installation provides coverage of government buildings, streets, and the Metrobus transportation system (including a 3.1 mile travel corridor that connects Vicente López to the city of Buenos Aires).

Result

Cameras were also installed along public ways, and in urban passenger transport stations and municipal buildings, providing a record of all people and vehicle movement. This allows officials to maintain order and rapidly respond to any incident that may occur. Key to the success of this first phase, an additional 160 cameras were placed in municipal police, civil defense and transit vehicles, bringing the total number of cameras used in the project to over 1000 – and resulting in the creation of one of the most comprehensive, cutting-edge urban video surveillance projects in all of South America.

The road to AXIS Q6000-E

Faced with the difficulties of successfully monitoring Vicente López with analog cameras, a new plan was put in place to establish an integrated and efficient video surveillance system.

Under the direction of Francisco Pérez Cárrega, the city's Technology and Logistics Director, analog equipment that produced poor image quality was replaced with high-resolution IP cameras from Axis. The entire system was designed and installed by the Argentinian company, Exanet S.A., an Axis partner.

For this transition, the city initially acquired 600 fixed and PTZ dome cameras offering HD and Full HD resolution. The following year another 50 cameras were added, consisting of both fixed and PTZ dome models as well.

After the first 650 cameras were installed, city officials decided to take its surveillance to the next level and Vicente López became the first city in Argentina to utilize the advanced technology of the AXIS Q6000-E, a quad-lens Full HD camera able to provide coverage to an area of over 20,000 square yards. Due to its multi-lens setup, the camera is able to zoom in to examine fine detail while simultaneously maintaining a wide, overall view of the scene.

Bringing the world's most advanced video surveillance technology to Vicente López with the installation of the AXIS Q6000-E has provided public officials with a high-definition view of an area equivalent to four football fields, along with the ability to render fine detail without losing view of the entire scene. This next-generation technology has enabled even more effective surveillance of suspects by police and other security agencies, resulting in a reduction in crime and increase in the quality of service they are able to provide to the public.

Transportation security

The following stage of the project was the installation of Axis cameras throughout the Metrobus system that connects Vicente López to the province of Buenos Aires, improving security for more than 200,000 daily users. This corridor is made up of a combination of over-the-road and underground mass transit that has reduced travel time by 32 percent. Metrobus stations and transfer hubs received 42 AXIS P3364-VE vandalism-resistant fixed dome cameras.

The city then went forward with the addition of cameras in municipal vehicles: 50 Vicente López police patrol vans, 20 civil defense automobiles and 20 transit vehicles were outfitted for a project total of 160 AXIS F1005-E models, in addition to the AXIS F44 Main Unit. Ideal for discreet surveillance from the interior or exterior of vehicles, AXIS F Series cameras are resistant to dust, rain, snow, vibration, impact and extreme temperatures.

AXIS F Series cameras installed in Vicente López were connected via WiFi to control centers, providing constant communication and enabling reduced response time to any incident. According to the city's security director, Santiago Espeleta, "This new technology will help save time and maintain better communication between patrol officers and control center personnel. This represents a huge leap forward in safety for Vicente López."

Comprehensive oversight

Currently the city's 1000-plus cameras are running around the clock and the captured video is constantly overseen by security officers at its Urban Monitoring Center (CMU).

According to Francisco Pérez Cárrega, Technology and Logistics Director of the City of Vicente López, "The addition of this new technology allows us to conduct searches faster and more precisely because we are able to define specific parameters such as vehicle size, color and direction of travel in order to narrow down our searches and improve accuracy."

These images support the work of 600 security-related agents including 100 patrolmen, two remote Vicente López patrol outposts, a new Police Command Center, neighborhood stations and the Urban Monitoring Center. Cameras placed along public roads, in urban passenger transport stations and municipal building also provide a record of all people and vehicle movement. This has enabled officials to maintain order and rapidly respond to any incident that may occur – and the positive effects of this sevenfold increase in the city's monitoring capacity are felt daily.

"With this next-generation Axis camera system we are able to make residents feel safe and we can respond quickly and efficiently to anything that happens whether it's a crime, an altercation on the transit system, or if we need to identify a suspect," explains Cárrega.

MUNICIPALIDAD DE
VICENTE LÓPEZ

exanet
SOLUCIONES IT

ANIXTER
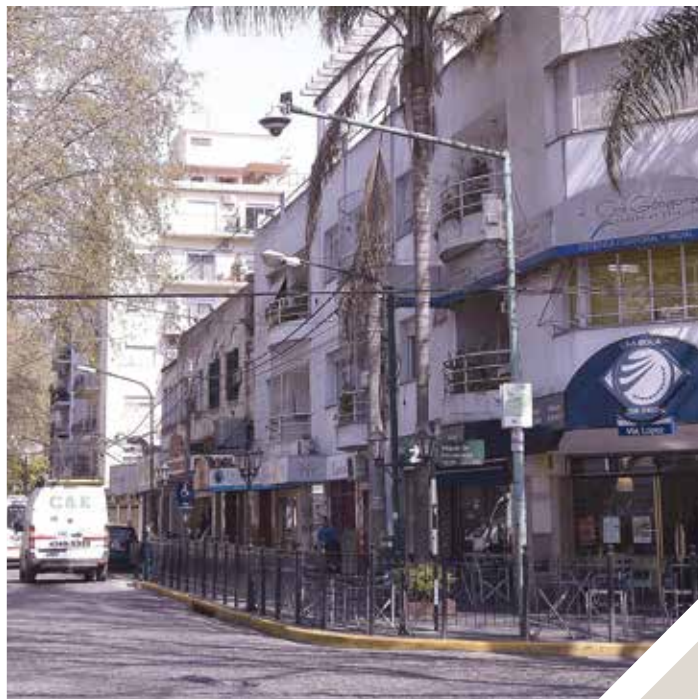
"It is a huge benefit that the city of Novi Sad now has a centralized video data center which is able to effectively conduct traffic and citizen safety everywhere."

Vladimir Knežević, Chief Technical Officer,
JKP Informatika Novi Sad.

City surveillance in high resolution.

The video surveillance of Novi Sad with 1000 Axis network cameras and HDTV resolution has successfully decreased criminal activity and enhanced traffic logistics.

Organization:
City of Novi Sad

Location:
Novi Sad, Serbia

Industry segment:
City surveillance

Application:
Public safety and security

Axis partner:
JKP Informatika,
IP WAY d.o.o., Aimetis

Mission

City development and urban planning require a high level of commitment and simultaneous deployment of all available resources. The City of Novi Sad requested a proposal for the procurement of an IP video surveillance solution that would be flexible enough to efficiently perform precise video monitoring of public places both day and night.

The main objectives of the Novi Sad City surveillance system were to increase the common citizen's security by monitoring educational institutions (pre-school, school and university campus), as well as surveillance of the most important city infrastructures. Not only was a centralized event management software solution with real-time information alerts and on-demand reports required, but the provision of HDTV quality network cameras was of equal importance.

Solution

In order to provide this solution the City of Novi Sad was equipped with Axis network cameras and Aimetis software for advanced video management and analytics.

Due to innovative, leading technology and the widest camera model portfolio, Axis was chosen as the only network camera manufacturer which completely covered all the requirements and specifications of this city surveillance project. Based on its seamless platform of video management and market-leading analytics, innovative licensing and easy-to-use interface, Aimetis Symphony was used for central management of the IP video surveillance system and video analytics. This state-of-the-art intelligent software along with Axis HDTV network cameras made the IP video surveillance system much easier to use.

Result

Novi Sad made it clear that the safety of citizens right down to the youngest child was top priority. The implementation of IP video surveillance in the city of Novi Sad rationalized the use of existing resources, improved city traffic logistics and enhanced the safety of the citizens.

"Over the past few years we have been very busy with the realization of ICT infrastructure for the City. Now that this vast job is finished we have an optical network infrastructure right across Novi Sad. IP video surveillance with Axis network cameras was the next step in exploiting the full possibilities of this existing network. It is a huge benefit that the city of Novi Sad now has a centralized video data center which is able to effectively conduct traffic and citizen safety everywhere."

Vladimir Knežević, Chief Technical Officer, JKP Informatika Novi Sad.

New challenges

For the first time in the history of city urban planning in Novi Sad, IP video surveillance was introduced as an infrastructural and integral planning component.

Video surveillance of large, open places such as major traffic intersections, university campuses and city squares, requires a superior camera. The cameras need to provide HDTV megapixel resolution, 16:9 aspect ratio and day/night functionality.

System scalability

JKP INFORMATIKA installed approximately 1000 Axis network cameras across the town's optical network ring. The city surveillance system was designed from the very beginning to be extremely flexible and scalable. Due to different location specifics, and variety of outdoor lighting conditions a very special solution was deployed.

The wide Axis product portfolio demonstrated the full potential that IP technology could offer. The IP video surveillance system based on Axis network cameras was the perfect solution for securing city areas where greater image detail is essential.

With HDTV resolution and individually configurable camera frame rates, the City of Novi Sad has achieved a precise and well optimized video surveillance system, with the possibility to scale upwards in the coming years.

With the Aimetis licensing model, by being able to mix and match the use of both Enterprise and Professional licenses and to add required number of licenses when needed, City of Novi Sad definitely invested in well optimized and smart-scalable IP video surveillance system.

Data and video monitoring center

For the purpose of storing video data, centralized event management and faster onsite response, Novi Sad constructed a data and video monitoring center based on the latest technology standards.

The use of Aimetis software, the market leader in IP video software solutions, insured that the video analysis was successfully integrated as an important part of the data and video monitoring platform.

Along with the centralized management, Aimetis provided real-time information alerts based on multiple applications such as: motion tracking, object classification, people/vehicle counting, virtual fencing, left/removed objects, dwell time, and auto-PTZ tracking.

Close cooperation with the Novi Sad police department lead to forming another data and video monitoring center in police headquarters. This way the police can always oversee important city areas and can intervene more efficiently.

"Axis network cameras with HDTV resolution were definitely a justified investment. Today Novi Sad has a significantly high level of public safety and improved city logistics. The state of the art technology that we have implemented is now a representative example of good city surveillance for all the cities in the region," says Vladimir Knežević, JKP Informatika

The city video surveillance of Novi Sad with approximately 1000 Axis cameras represents a milestone in the safety of citizens and a vast improvement of city logistics matters.

This successful city surveillance project with Axis network cameras will be an exemplary model for other city governments who are striving towards better city development and growth in the future.

Maintaining daily life in harmony with Axis.

The city of Cayala uses Axis network cameras to provide endless opportunities and amenities to enjoy life in a modern, controlled and safe city.

Organization:
Cayala City

Location:
Guatemala City,
Guatemala

Industry segment:
City surveillance

Application:
Safety and security,
remote monitoring

Axis partner:
Revtec

Mission

Cayala, born with the foundations of traditional urbanism and surrounded by woods, contains a great natural wealth to its denizens. The 63 combined acres of land that make up the heart of the city include housing, commercial space, recreation areas, offices and medical clinics. Cayala offers dreams and realities in one place for its people. The challenge for the Cayala government is to offer a reliable and secure environment within a country not known for its first-rate security measures.

Solution

Cayala has implemented a differentiated security system that provides safety for the people of the city; in less than 30 years, the area has seen a 450% growth in the local economy as compared to its initial value. Therefore, the installation of Axis network cameras in Cayala was vital. The system of Axis products has proven to be unbeatable, as it provides a wide range of possible applications in the city.

Currently, Cayala has more than 740 Axis network cameras installed throughout the project along with two monitoring centers. The city selected cameras that were both vandal-resistant and designed for outdoor use. With varying climates, they also implemented cameras that would thrive regardless of rain or fluctuating lighting conditions.

Result

Without previous security presence in the area, surveillance is now an intricate feature within the city of Cayala. International consultants developed one of the most efficient security plans in Latin America, and with the addition of Axis network cameras and further safety equipment, it became possible to contribute to the concept of "Safe City," combining human resources and management to have a create an intuitive approach through observation, communication and information management. All of these factors are obtained through the different technology platforms on each Axis product.

An investment comes to fruition

In early 2003, led by a master plan for Cayala City, a team of more than 25 architects came together led by the "father of traditional urbanism," Leon Krier. Their aim was to create a harmonious community. In 2011, the main commercial area opened, including convenience services and necessary establishments to develop a healthy lifestyle. With an investment of over 200 million dollars spanning the project length of more than 25 years, Cayala is now considered one of the fixtures of investment in Guatemala.

Ensuring security in varying conditions

The urban and architectural planning in the first phase covered over 68 thousand square meters of construction. This piece of the plan was created to maintain a safe environment for both visitors to Cayala and its residents. It was essential to have a video surveillance system with the best features, like high resolution cameras, to suit the demands of a "Safe City." The use of analytics continues to help facilitate decision-making and the implementation of new policies. Of the 92 Axis cameras installed, many different models were chosen with each installation point in mind. To utilize the most strategic cameras properly across the system, Cayala distributed a variety of Axis network cameras across the city. With seven AXIS Q1604-E Network Cameras and 29 AXIS Q6042-E PTZ Dome Network Cameras in place, the city has tools that are outdoor-ready and prepared for extreme temperatures.

All of the fixed cameras in Cayala have licensing to perform AXIS Cross Line Detection, an analytic that detects moving objects that cross a virtual line, triggering an alert to the proper authorities. Many other analytics are implemented as well, such as motion detection, audio detection and anti-tampering alarms. In addition, all of the cameras selected provide HDTV-quality video, ensuring smooth footage even in the most challenging of lighting conditions.

These include 48 AXIS P3364-VE Network Cameras with Lightfinder technology for potentially poor lighting conditions and 13 AXIS P3384-VE Network Cameras that help capture changing lighting conditions with wide dynamic range capabilities.

Reaping the benefits of safe living

Cayala now has a monitoring center, where security footage and other information are brought together for analysis and dissemination, collected from various sources. Those include government agencies, private organizations, residents and visitors, as well as specialized Axis equipment. Response times to events and incidents in the city have been faster and more effective with real-time management for crisis response. Large zones within the city required the use of more robust tools, and the Axis network cameras achieved a greater coverage of vast distances with fewer cameras. Among the many components to the AXIS P3364-VE is its compatible P-Iris control, allowing officials to precisely control the iris position. The iris opening is optimized for depth of field, lens resolution and incoming light, resulting in exceptional image quality with optimum sharpness.

Harmony, effectiveness and economy

Unlike the paradigm of the old days, where the preservation of laws and order in a city was the responsibility solely of the federal police, Cayala has the scope of the city with a single security agent in a monitoring center. Rather than guarding and patrolling the streets with small and limited resources, new technologies implemented have a large cost benefit to Cayala under the wing of security and surveillance. As modern cities have changed dramatically in recent decades with security measures, mostly in implementing technological tools, Cayala is now at the same high standard as a city that offers scenic nature, the conveniences of modern life, and above all, security in its community.

PASEO
CAYALÁ

revtec
revolution technologies

Incidents reporting decreased by 50%.

Minoh City installed Axis security cameras on all municipal elementary and middle school routes.

Organization:
Minoh City Council

Location:
Minoh City, Osaka Prefecture, Japan

Industry segment:
City surveillance

Application:
Safety and security, crime prevention

Axis partner:
Apro, Inc.

Mission

Minoh City in Osaka, home to a population of 130,000, is full of rich natural environments including Meiji-No-Mori Minoh National Park (famous for its waterfall). It is a popular place to live and was ranked No. 1 in Osaka Prefecture and No. 26 in the whole of Japan in the "2013 Best Cities To Live"* ranking. In May 2014, the Minoh Police Chief asked the Mayor of Minoh to install security cameras on city streets. They were concerned about a number of kidnapping cases of young children which had recently taken place throughout Japan and reports of what seemed to be attempted kidnapping incidents within the city as well, so the city council decided to install security cameras to ensure safety on the school routes to prevent such crimes against young children.

Solution

In the two-month period between February and March 2015, security cameras were installed on 14 municipal elementary and middle school routes in Minoh. On average, 50 cameras were installed per school route, totaling 750 throughout the city.

This number, i.e., 50 per school route, is one of the highest on a nationwide level. Minoh is the first city in Osaka to have security cameras installed on all school routes throughout the city. They are equipped with the "privacy masking function", which masks specified locations such as house entrances and windows in order to protect residents' privacy. The collected data is stored for about one week, and can be provided to the police if necessary for investigations.

Result

The installation of the cameras had an instant effect. A purse snatcher on a moped was arrested in Minoh in June 2015. Multiple cameras captured clear images of details of the moped, the clothing of the suspect and the stolen purse, and an arrest was made using the images captured. This was the first case where a suspect was arrested thanks to a camera installed by the city council.** In addition, the number of reports about suspicious incidents has been halved*** since 2014 (decreased from 30 cases to 17).

"When we compared the images taken in a dark area by various cameras we saw clear differences in camera performance. We had to choose a camera that can take pictures clear enough to be used to identify suspects. We also publish clearly captured images on the website of Minoh City as preventative measures. The fact that a suspect was arrested thanks to the captured images contributes to further crime prevention. I expect we can further reduce the number of crimes by repeatedly letting people know about the existence of security cameras on our city streets."

Mr. Tomotaka Ogino, Citizen Safety Division, General Affairs Department, Minoh City Council.

As a result of a number of kidnapping cases of children in Japan as well as what seemed to be kidnapping attempts in Minoh, the Minoh city council decided to install security cameras on all municipal elementary and middle school routes.

The city council decided to expand its Subsidy System for the Residents' Association's security camera installation campaign for the next two years, starting in 2015, to install more security cameras within Minoh City. The upper limit of the subsidy has been set at 200,000 yen, 90% of which is said to be supported by the Minoh City Council. In addition, the electricity bill and repair fees for cameras would also be covered by this subsidy.

Clear color images in low-light environments

The camera models were carefully selected. Only models from four manufactures passed all the 17 performance criteria defined by the Minoh City Council. The final selection was made by comparing images captured by the various models.

After strict screening, AXIS P1354 Network Camera was finally chosen. It features Axis' Lightfinder technology which captures clear color images even in low-light environments and has been used for security projects in many parts of the world. The judges unanimously ranked this product first in the final selection meeting. This product was introduced to the Minoh City Council by IT consulting company Apro, Inc.

"Many users may choose a particular camera model only using the quantitative information on the specifications such as camera features, angle of view and resolution. But I strongly recommend you actually handle the cameras with your hands and fully compare the details of the captured images. Also, publishing clearly captured images would further prevent similar crimes in the future, I presume," said Mr. Ogino of the Minoh City Council. The crime prevention projects supported by the high quality visual surveillance system are rapidly expanding.

Mounting on poles

In addition, various problems had to be solved during the course of the security camera installations within Minoh City. In particular, selection of camera model was carefully made via cooperation between Osaka Prefectural Police, Minoh City Police and volunteer groups in the community. In general, security cameras are mounted on utility poles. However, it was found that some poles were owned by Kansai Electric and others by NTT (Japan Telecom) and some were not suitable for camera mounting.

Therefore, they had to check the ownership of each pole and submit applications to obtain usage permission from the respective owners. Moreover, they had to check whether the land surrounding the utility pole was a part of a city road, prefectural road, national road or was private land. If it was found to be private land, the ownership was checked and Minoh city workers had to visit each owner to seek their permission. Also, during installation, work vehicles had to be parked near the installation sites and workers had to work on a ladder resting against the pole, so they had to seek cooperation from the local police.

Sharing information

News on crime prevention and safety related projects is publicized on the Minoh City website from time to time in order to provide useful information, not only to citizens but also to parties considering the implementation of security cameras. The city council made its best efforts through public relations activities and media exposure to let its citizens know that the security cameras would be operated in a way that did not compromise their privacy. As a result they won the understanding and support of the broader community. In fact, it was found that few citizens were concerned about their privacy but that the majority of them strongly supported the idea of the security camera installations. And it is expected that the affirmative disclosure of information will further contribute to crime prevention.

*Sourced from "City Data Pack 2013 Edition" published by Toyo Keizai Inc.
**Sourced from the website article of Sankei WEST on 6/9/2015
***Sourced from the Minoh City Council Manager blog on 6/29/2015

Minoh City Website: Crime Prevention page
www.city.minoh.lg.jp/kurashi/bouhan/

The Minoh City Council Manager blog
http://blog.goo.ne.jp/butyoublog

Improving quality of life in Leon with Axis.

Innovative industrial city in Mexico launches intelligent surveillance and monitoring center.

Mission

Leon is a large city of 1.4 million people in the central Mexican state of Guanajuato. Because of security risks and a lack of personnel to cover high-crime locations, the municipal government installed analog cameras to serve as a force multiplier. However, the analog cameras were exposed to vandalism in the streets and often suffered external damage. Furthermore, the current system was not scalable and prone to failure. Leon officials decided to modernize the surveillance system to better meet their needs.

Solution

With a 50 million pesos investment, the Municipality of Leon replaced its analog cameras with state-of-the-art Axis IP cameras throughout the city and suburbs. They determined camera locations by mapping emergency calls made to the police and selected a mix of Axis fixed dome and pan/tilt/zoom (PTZ) network cameras. Axis was chosen because of its reliability, vandal-resistant enclosures and image quality even in low light.

With an IP-based solution, the municipal government can expand the network as they see fit.

Result

By selecting IP-based network cameras, the municipality was able to expand their surveillance network beyond what the previous system would support. AXIS Camera Companion also helped reduce the previous equipment failure issues and made system maintenance easier. In recent months, the system captured a wide variety of incidents on video that could have otherwise gone unnoticed ranging from administrative infringements to assaults. The evidence has helped the municipality resolve these incidents and increase the quality of life for its residents.

" We first used the Axis IP video system to record video in hard-to-access sites that required constant surveillance. However, in the case of the urban surveillance, we had only used analog systems that never worked 100 percent well. When we realized the IP video systems worked for the same period of time without any problem, the decision to switch was obvious."

Noé Felipe Herrera Saldaña, Leon C4, Telecommunications and Security Coordinator.

History

As a municipality, Leon wanted to make the best use of public resources, which meant finding the most effective video surveillance solution. The decision to select Axis cameras was based on their ability to provide the high resolution video quality necessary for city surveillance. Additionally, as some areas of the city can be dangerous and may not have much illumination at night, the municipality needed cameras that could provide detailed coverage in low light conditions. In the case of the municipal buildings, officials needed to identify the faces of the people who have access to the buildings, as well as monitor the activities in the armories. Above all, the long lifecycles of Axis cameras provided the best cost-benefit ratio.

Installation

In the past, meeting the city's security needs would have required sizable expenditures, including hiring a large number of operating staff and police units. Today, the IP camera solution provides much-needed eyes on the street without increasing staff.

To determine the best locations for the cameras, the city mapped calls from residents to the municipality's 066 emergency care system. The majority of the 96 cameras installed were the outdoor rated AXIS Q6032-E PTZ Dome Network Camera with 36x optical zoom. They also selected the very discreet, vandal-resistant AXIS M32 Series Fixed Dome Camera with motion detection and tamper-proofing.

Furthermore, AXIS P1346 Network Cameras with HDTV resolution, automatic day/night functionality and P-Iris control provides the municipality with clear video in various lighting conditions. Finally, they installed the water and dust resistant AXIS P5532 PTZ Dome Network Camera with 29x optical zoom that provides superior image quality even in low light conditions.

All the cameras are monitored by operators located in the C4 Command Center, but they can also be monitored remotely from other buildings of the Public Security Ministry.

Consistency, effectiveness and savings

Overall, the cameras have helped traffic agents and police investigate incidents and prevent crimes including assaults, kidnappings, traffic accidents and inappropriate behavior by authorities. The video has also helped improve traffic by capturing traffic lights failures and accidents that affect traffic flow.

Furthermore, productivity has increased thanks to a reduction in response times for emergency personnel. The system also led to a reduction in maintenance costs, as the switch to a digital video surveillance system eliminated failures reported in the previous analog system. Additionally, the cameras are easy to install, so the municipality can quickly relocate them to make the system more dynamic.

The Axis system has proven to be a reliable tool for increasing security in the municipality. The clear, sharp images give officials the ability to analyze events more efficiently than with other technologies used in the past. Additionally, the equipment has kept working even under extreme conditions after 8 years of use, 24 hours a day, 365 days a year.

Upon completion of the project, the camera system helped optimize the municipality's investment in improving law enforcement efforts, and they were able to meet their commitment to the citizens of Leon, who demanded effective and positive change in public safety.

From one Carnival to the next.

More than 800 Axis cameras protect the Bahia population, support tourism and enhance events like the World Cup and Olympics.

Organization:
Bahia Secretary of Public Safety

Location:
Bahia, Brazil

Industry segment:
City surveillance

Application:
Urban safety and security

Axis partners:
Cambium Networks, Digifort

Mission

Bahia has had an intense schedule. Its capital, Salvador, was one of the six host cities of the FIFA Confederations Cup in 2013. In the same year, Costa do Sauípe, north of the capital, set the stage for the World Cup draw. In 2014, Salvador attracted worldwide attention as a World Cup host city, and in the following year hosted one of the qualifying matches for the 2018 World Cup. In addition, the Rio 2016 Olympics will also have soccer matches in the city. At the same time, Bahia welcomes thousands of tourists for Carnival and other festivities throughout the year, with the challenge of ensuring the safety of citizens and tourists in the midst of all of this activity.

Solution

Since 2013, the Bahia Secretary of Public Safety has been modernizing and expanding its video surveillance system with Axis network cameras and software from Digifort, an Axis partner. The old analog system initially received 235 AXIS Q6032-E Network Cameras.

In view of the results, another 400 of the same cameras were purchased the next year, followed by another 165of the AXIS Q6044-E model. In 2015, 35 cameras were added, with plans to keep expanding.

Result

With many cases solved with the help of imagery, Bahia saw a drop in the number of intentional violent crimes. Operators can now identify a vehicle's license plate up to 400 meters away, allowing fines to be given to perpetrators. The cameras were also a strategic asset in police work involving demonstrations during international events. And Carnaval, of course, has been captured in all of its colors in HD quality.

Start and expansion

The old analog video surveillance system used by the Bahia Secretary of Public Safety had its limitations. According to Lieutenant-Colonel Marcos Oliveira, the cameras' range of vision was short, and the images lost quality for viewing and recording. This made it impossible, for instance, to recover video for processing and helping to identify suspects.

Salvador was the first city to get Axis cameras. The Carnival festivities had cameras in 16 police posts, each with 8 to 10 cameras on average. This allowed the police force to begin responding faster, with the community's approval. There is now a greater focus on prevention, with suspects confronted and led away to police stations, reducing potential aggression. With the use of cameras, various illegal acts were caught and problems were anticipated during Carnival.

Some of these cameras continue to monitor the city's streets throughout the year, since their strategic locations help to keep citizens safe. "The system makes the police force more efficient and effective, with a greater sense of safety for citizens and visitors, and with a much greater range of operation," says the Lieutenant-Coronel.

The images of all of these cameras are viewed both locally and at a central monitoring station. For example, in the district of Pelourinho, the city's "picture postcard", there are 40 cameras monitored simultaneously from the 18th Battalion headquarters and the Integrated Regional Command and Control Center. In contrast to the analog system, the quality of the images can now be scaled up or down in order to optimize traffic.

In view of the results, the project was extended to cities such as Porto Seguro, Candeias and Camaçari, while several cities in Bahia have started sending images from their cameras to Salvador to reinforce local surveillance – such as Feira de Santana, a city with more than 200 Axis cameras installed. "We are taking the technology employed in Salvador, which has helped us reduce crime rates, to the cities of the metropolitan region and to the interior," says Maurício Teles Barbosa, Secretary of Public Safety.

The plan for the next few Carnivals includes installing 20 cameras in access corridors to the festivities to prohibit the entry of firearms and drugs in the Carnival circuit. There are also plans to take the project to other Salvador districts and cities in the interior, such as Serrinha and Barreiras.

An eye on Black Blocs

At the Confederations Cup, Axis cameras helped to monitor major demonstrations. Troops were mobilized according to needs, and the event at the Fonte Nova arena was conducted safely, as explained by Oliveira: "Using the cameras, we identified ringleaders and stopped acts of vandalism. Everywhere there was a camera, our response was massive to avoid riots and increase citizens' safety." The next big challenge was the World Cup. Most of the games were scheduled during peak traffic times, with major concerns in terms of the flow of vehicles and people. Public demonstrations against the World Cup continued to be monitored by the cameras, including attacks from the so-called "Black Blocs", known for acts of vandalism in public and commercial areas.

The cameras captured the demonstrations from the very outset. Since we already knew the route the groups would take, the police were able to create a barrier to ensure that festivities could be held at the Farol da Barra lighthouse, and that fans could access the Fonte Nova arena," says Oliveira.

After the World Cup, all eyes turned to the 2016 Olympics. The integrated strategic safety plan for the Rio 2016 games, including 10 soccer competitions to be held in Salvador, had almost identical safety measures, although the event was larger in size and shorter in time span. The strategy is to find more and more integration.

Vera Cruz, on the island of Itaparica (green area on the left), is also monitored by Axis cameras, whose images are sent via radio to Salvador (right)

Photo: Carol Garcia

" I found that the quality and speed of implementation of CCTV project both are excellent. The integrated surveillance system has helped to increase the Police efficiency and ensure better safety and security for our citizens."

Lieutenant-Colonel Marcos Oliveira, Secretary of Public Safety of Bahia (SSP-BA)

Cambium Networks™
Connecting the Unconnected™

"This mega operation, successfully put together in the last two years, will be repeated," says Oliveira, who is also the coordinator of the State Board of Public Safety and Civil Defense for the 2016 Rio Olympic Games in Bahia.

Wireless transmissions
The Bahia Secretary of Public Safety's first experience with wireless video surveillance was during the final draw of the World Cup in Costa do Sauípe. Here, eight cameras were installed along the Estrada do Coco and Linha Verde roadways, connected via radio links. "It was a short event, but required a lot of attention, mainly in the traffic and entry areas," recalls the Lieutenant-Colonel.

Years later, a surveillance system was inaugurated in Vera Cruz, a key commercial and tourism area of Bahia on the island of Itaparica, with 8 AXIS Q6044-E Network Cameras and Digifort software. The images are also transmitted via radio from the island to a tower at the Quartel dos Aflitos historic military facility in Salvador, and from there to the Command Center.

The radio model used to carry the signal is the PTP800, from Cambium Networks, an Axis partner. The radio has a capacity of up to 368 Mbps full duplex, and can send signals from many cameras at different distances, depending on the operating frequency. "The distances start at 10 kilometers," says Marcio Romano, Cambium's Regional Sales Manager for Brazil.

Technology + people
One of the reasons for the success of the expansion of Bahia's video surveillance system is the efficiency of the anti-violence campaign – which cannot be achieved just by increasing the number of cameras. "You can't have more cameras with less staff. While I am installing cameras, I must have a response to what the cameras are showing us," says Lieutenant Colonel Marcos Oliveira. "What we did was to streamline the use of our human resources for the benefit of the citizens."

For the Bahia Secretary of Public Safety, the cameras contribute indirectly towards the population's safety insofar as fewer police are deployed to areas merely with crimes against public property, where the consequences are less serious. "There are cases of people who were caught committing crimes in apparently deserted areas, who later said they had no idea they were being watched," explains Oliveira.

Furthermore, this strategic management reinforces policing in more active areas, in combination with the cameras. Thus, the police presence is higher in more violent regions, boosting the sense of citizen security.

The response of this combination of technology and the police force can be seen on the streets. On one occasion, the early stages of a vehicle theft in plain daylight were captured by the Axis cameras. In the control room, one of the operators identified a high-speed vehicle in the vicinity, and suspected it might be connected to the crime. The operator generated an alert and guided police on the street to intercept the vehicle, giving a description of its characteristics via radio. The police were able to stop the vehicle, which indeed had been stolen.

Traffic violations
To galvanize cooperation between the police and traffic authorities, the Bahia Secretary of Public Safety is establishing a technical image-sharing agreement with the Salvador City Council. This will allow approximately 90 cameras distributed along major roadways to be viewed live for traffic management purposes, optimizing the use of images in addition to security.

From the Integrated Regional Command and Control Center, operators can identify suspicious vehicles and read the license plate with the naked eye, even with cars which are moving or are far away. "We can read a car's license plate from 300 to 400 meters away with the naked eye alone," says Lieutenant-Colonel Oliveira. "Then, we enter the license plate in the system to find out if the car is involved in a theft, robbery or any other crime, and can immediately deploy the closest vehicle to intercept it in some cases."

Crime on the decline
According to official data, the government of Bahia's "Pact for Life" program saw a 3.3% decrease in the number of intentional lethal violent crimes in the first 10 months of 2015 compared to the same period in 2014. For example, Camaçari, one of the cities that was allocated Axis cameras, saw a 9% drop in the number of homicides between January and October 2015.

About Axis Communications

Axis offers intelligent security solutions that enable a smarter, safer world. As the global market leader in network video, Axis is driving the industry by continually launching innovative network products based on an open platform - delivering high value to customers through a global partner network. Axis has long-term relationships with partners and provides them with knowledge and ground-breaking network products in existing and new markets.

Axis has more than 1,900 dedicated employees in more than 40 countries around the world, supported by a network of over 75,000 partners across 179 countries. Founded in 1984, Axis is a Sweden-based company listed on NASDAQ Stockholm under the ticker AXIS.

For more information about Axis, please visit our website www.axis.com.

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