

Breaking the mold of traditional city surveillance.

The City of Calgary is building a smarter, safer city through integrated IoT solutions.



Organization:

The City of Calgary

Location:

Calgary, Alberta, Canada

Industry segment:

City Surveillance

Application:

Smart city, safety and security

Axis partners:

Convergent Technologies,
Milestone Systems,
Live Earth

A comprehensive security solution

Innovation has long been a word closely associated with The City of Calgary. Since the dawn of its "smart city" initiative, the city has been recognized for its forward-thinking undertakings, including the modernization of the tools and resources available to its security teams. Among other accolades, the city received the 2018 Alberta Minister's Award for Municipal Excellence and a 2019 Smart 50 Award for influential IoT projects. All of which underscore the city's dedication to using modern technology to solve municipal, infrastructure, and law enforcement problems.

While Calgary deployed thousands of traditional analog cameras to conduct video surveillance throughout the city, the task of monitoring and scaling those cameras proved to be daunting as a proprietary system.

To increase both the efficiency, effectiveness and interoperability of the city's video surveillance system, Calgary worked with systems integrator Convergent Technologies to identify modern solutions capable of meeting the city's needs.

"We monitor over 900 different sites throughout The City of Calgary," says Alex Lee, Security Advisor, Technical Operations, Corporate Security, City of Calgary. "So, you can imagine that we've seen just about every scenario in terms of security incidents."

Automating surveillance of prioritized areas

One of Calgary's most heavily-trafficked areas is Olympic Park, located directly in front of the city's Municipal Hall. The park sees a regular stream of visitors, public events, protests and after-hours trespassers. This high volume of traffic makes keeping the area safe and secure a high priority for the city.

The park served as the perfect environment to pilot several new technologies, including multi-sensor cameras and AXIS Perimeter Defender video analytic software. After deploying AXIS Q6000-E PTZ (pan/tilt/zoom) Network Cameras with multiple sensors, the security team explored a broad range of additional security options from Axis including thermal imaging cameras, network radar detectors, network audio technologies and bispectral network cameras that combine visual and thermal video streams in a single PTZ camera.

A vision for all security data in one place

Of course, deploying the necessary equipment to collect surveillance data is only half the solution. The other half involves having the right software in place at the city's Integrated Security Center to interpret that data and ensure that it reaches the right people.

The City of Calgary uses XProtect Corporate open platform VMS from Milestone Systems to serve as the core of the system, allowing the city to tie surveillance technologies with multiple data sources together in a useful way.

"When you think about it, there isn't any better data collector than a camera," says Lee. "We can talk about audio detection, gunshot detection, temperature sensors, water level sensors, humidity sensors — all good data, but nothing compares to the information collected by a camera. And if you can tie all that data together, you really have an effective and usable system."

Data visualization to improve response times

To further optimize the city's data, Converjint and Milestone established a pilot program with Live Earth, an Internet of Things (IoT) visualization platform that compiles multiple data sources from various systems, sensors and vehicles, providing a common operational view. Live Earth enables operators in the Integrated Security Center to overlay camera placements on accurate maps of the city to quickly visualize, in real time, where all of the cameras are and potentially react to incidents much quicker.

Once the software integrates with the city's fleet vehicles to show mobile security guards on the map, the team hopes to see significant efficiencies. "If we can shave 20, or even 30, seconds off incident response times," explains Lee, "we could potentially save a life."



Staying alert with advanced solutions

Camera technology has come a long way since Calgary first installed its traditional analog cameras, and the new resources available to the city represent a serious leap forward for proactive security. One of Calgary's most important tools are AXIS D2050-VE Network Radar Detectors for identifying potential trespassers and relaying an alert to nearby security personnel.

"Wow, were we impressed with the network radar detector!" Lee describes. "Currently, that's what we use to detect whether someone is in the park after hours. It detects objects and classifies what it thinks the object potentially is. For instance, it might tell us it's 80 percent confident that an object is a human, which is helpful context to have."

The ability to set alerts to trigger at specified detection thresholds is a key part of what makes the system successful. When the city first began installing cameras in Olympic Park, they found that they were getting a high number of false positives from small animals like squirrels—and even from the movement of the park's nightly light show.

By using thermal cameras to screen out the light show and the radar system to set size parameters, the city was able to dramatically reduce the number of false positives routed to the security team.



Axis network radar detector complements the video surveillance system by detecting and classifying objects.



AXIS Q87 Bispectral PTZ Network Camera provides visual and thermal video streams in a single PTZ camera.



Intelligent video helps evaluate and respond quickly

The use of analytics has enabled The City of Calgary to reduce its susceptibility to human error. Instead of relying on a handful of individuals to monitor the city's several thousand cameras, they can all be monitored simultaneously by an analytics program designed to alert security personnel if certain parameters are met. For example, cameras enabled with AXIS Perimeter Defender were installed in one Calgary parkade after a city employee was harassed by a trespasser, and the resulting round-the-clock monitoring has greatly reduced the likelihood of such an occurrence happening again.

"We were able to find the perfect configuration, and we've been getting nothing but success," says Lee. "We do get some false positives—some of the staff do ride their bikes into the parkade—but even with those, it's doing its job. It's noticing that it's a person on a bicycle rather than a vehicle. It's picking it up immediately and alarming in our operations control center, and we're able to evaluate and respond to it extremely quickly."

New possibilities for interdepartmental cooperation

Security isn't the only purpose that Calgary's new surveillance network is serving. Lee points out that the cameras are used for solutions as unique as monitoring water levels in the city's rivers to evaluate flood risks—dramatically increasing the efficiency of what had been a time-consuming manual process.

"We want to be more than just a security solution," says Lee. "We want our business units to utilize our cameras as operational tools as well."

Stories like this have quickly reached the ears of the other city departments, and many have reached out to Calgary's corporate security team to inquire about whether these new surveillance tools might have use cases for them as well.

"The number of requests that come in to work with us has just blown up exponentially," says Lee. "We have seen our relationships grow with other business units because when we visit them with a security proposal for a problem they are having, we also try and educate them on the technologies that we are looking into or currently working with."

ROI thanks to IoT

This level of interoperability is music to the ears of an integrator like Convergent, providing them with the opportunity to show how solutions originally intended for a specific purpose can be deployed to address new challenges the city had never before considered.

"Anytime they can leverage an existing, or even a new security sensor, to solve business issues by adding a simple analytic, that's huge," explains Mark Sheahan, Account Executive, Convergent Technologies. "They are doubling up on the initial investment to solve two problems or serve multiple purposes."

For Calgary, the result has been a safer city. The security personnel who use these resources every day recognize the added value these new solutions provide both to them and to the city at large. City administrators frequently solicit feedback from the security teams on the ground, and the positive reception to the new tools has been particularly gratifying.

"It has been great listening to our operational guard staff share how amazed they are with the new surveillance technologies, especially the network radar detectors and bispectral PTZ cameras. They want them installed everywhere!"

Alex Lee, Security Advisor, Technical Operations, Corporate Security, City of Calgary



About Axis Communications

Axis enables a smarter and safer world by creating network solutions that provide insights for improving security and new ways of doing business. As the industry leader in network video, Axis offers products and services for video surveillance and analytics, access control, and audio systems. Axis has more than 3,000 dedicated employees in over 50 countries and collaborates with partners worldwide to deliver customer solutions. Axis was founded in 1984 and has its headquarters in Lund, Sweden.

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