Looking beyond solving crime.

The City of Calgary integrates Axis cameras, security radars, horn speakers, strobes, and analytics to tackle urban problems. The metadata helps with flood mitigation, roadway planning, festival operations, and more.

ORGANIZATION
CITY OF CALGARY

LOCATION
CALGARY, ALBERTA, CANADA

CUSTOMER NEED
PUBLIC SAFETY, PROPERTY AND ASSET PROTECTION

Making life better every day

In 2018, the city of Calgary decided to scrap its legacy analog security system in favor of a standardized, sustainable network-based solution. It rebuilt its entire IT infrastructure on a highly redundant open platform, developed a "Security Standards Document" as a guideline for adopting current and future technology, and replaced its 4,000 legacy cameras with more advanced Axis network cameras. The solution covers 900 sites throughout the city and is monitored 24/7 via a video wall in the Integrated Security Center located in Municipal Hall. When alarms come in operators can visually verify the situation and dispatch officers to the scene.

"We now have a solution in place that can quickly adapt to a changing landscape of city needs," says Alex Lee, Security Systems and Technology Lead for Department of Technical Services, City of Calgary. "And by standardizing on Axis technology, we've made the solution more sustainable and easier to support."

While the initial focus of the smart city initiative was to improve public safety and security, the Technology Services team quickly realized that the metadata collected by the cameras could also be used to help modernize other areas of city management. The team began brainstorming new use cases for the versatile cameras, working with the IT Department in the city's Innovation Lab to rigorously test

the potential impact of new applications and devices on the overall system. Once a new solution launches stakeholders can visit the city's Experience Lab for hands-on demonstrations and training on what the solution can do.

"The government of Calgary employs over 18,000 people," shares Lee. "Once people started realizing the value that video metadata can provide for the operations they manage, the requests for solutions started rolling in."

Calgary has received numerous accolades for its initiatives, including an international Smart 50 Award that honors innovative and transformative smart city projects. Equally important, is the novel uses of technology which has contributed to Calgary's 2022 ranking by "The Economist" as the world's third most livable city.

Rousting late-night trespassers from public parks

One of the dilemmas Calgary's Parks Department faced was how to protect its Olympic Park from after-hours access. "Although all our parks close from 11 p.m. to 6 a.m., with no fencing around them, there's no way to enforce that rule," shares Lee.

AXIS
COMMUNICATIONS

"People use it as a cut through to the train station or loiter at nighttime engaging in all sorts of illicit activity. That creates a safety and liability issue for the city."

Since erecting fencing around the area would undermine the friendly nature of the park, Lee's team looked to technology for answers. The first step was to install AXIS Q60 PTZ (pan, tilt, zoom) Series cameras around the perimeter of the park to capture any after-hours motion. To avoid false alarms from small animals and the park's laser lights, the city added AXIS Radar Autotracking for PTZ to distinguish between human and animal motion, automatically trigger an alert, and direct the cameras towards the intruder.

"The detection worked well," shares Lee. "But we couldn't dispatch our mobile patrol fast enough to deal with the situation. So we installed an Axis horn speaker in the park and recorded a handful of messages our security control center operators could broadcast to warn intruders to vacate the park."

While adding the horn speaker seemed to discourage most trespass-ers, there still remained a few repeat offenders who continued to ignore the messages. So the next step was to add Axis network strobe sirens to the mix. "When we added the blinking red strobes, it scared people into thinking it was an emergency and the police were on the way and so they'd leave," states Lee. "Nowadays it's very rare to find people hanging out or taking shortcuts through Olympic Park when it's closed."

Measuring river levels to mitigate flooding

Because downtown Calgary sits at the confluence of two major rivers, the potential for flooding is always a concern. "Back in 2013, we had one of those catastrophic hundred-year floods," shares Lee. "The devastation to the downtown area, underpasses and surrounding neighborhoods was $5 billion city wide."

In response, the River Engineering Department erected retaining walls and barriers to manage heavy rains and the annual spring melt from the nearby mountains. They took daily readings of the river level at different points throughout the city.

"They used floating sensors in the river which weren't very accurate," explains Lee. "They'd bounce up and down with every turbulence in the water."

To provide river engineers with more precise data collection, Lee programmed the Axis PTZ cameras already deployed in the emergency call stations beside the bike and pedestrian pathways along the river. Once an hour, the cameras would swing over to the bridge pillars to take a look at the river levels. "We wrote a script to analyze the metadata and track whether the river was rising to critical level," says Lee. "If the analysis shows the water is rising too fast, an alert goes out to river engineers to mitigate the situation by opening the floodgates in the dam, closing off city drainage into the river, or take other action."

Mobilizing cameras for monitoring festival crowds

Calgary hosts dozens of festivals throughout the year that attract millions of visitors to the city. Whether the draw is music, sports, food and drink, arts and entertainment, cultural pride, or neighborhood celebration, managing the crowds and anticipating event needs can be challenging.

Two of the city's biggest events are Canada Day and the 10-day long Calgary Stampede, a western heritage celebration that includes the world's largest outdoor rodeo, chuckwagon racing, and agricultural activities. "Because they happen in open parks, it's hard to measure attendance at these events," says Lee. "But you need that data to figure out parking, staffing, emergency response, even things like the number of garbage cans and portable toilets."

To help Canada Day organizers collect data, Technical Services dispatched a mobile trailer equipped with Axis cameras to the park to capture a bird's eye view of the event. Lee's team, in conjunction with the city's IT Innovations Lab, used Axis' open application programming

interface (API) to develop a custom people counting analytics to review the snapshots and accurately determine attendance.

"Knowing how many people actually showed up helps the parks make better decisions about future events," claims Lee. "Now parks are requesting the trailers at every event they hold and asking us to monitor other things in addition to head count."

Protecting city's parking and storage compounds

When the city's largest fleet parking area, Highfield compound, started facing a rash of catalytic converter thefts, Technical Services had to rethink the site's security system. Despite an eight-foot-high chain link fence topped with barbed wire, Axis security cameras, and a robust access control system, thieves were finding their way onto the property.

"They'd hide in a dark area of the fence line behind some bushes, cut the fence and sneak in," tells Lee. "And once they met with success, they kept coming back."

Lee's team devised a plan to thwart them. "We installed a number of Axis thermal cameras to watch the entire fence line of the compound and equipped them with AXIS Perimeter Defender, a perimeter protection analytic," explains Lee. "When the thermal cameras detect a heat signature outside the fence line after hours, they send up an alert to security."

The solution worked. They caught one group of thieves as they were cutting their way in. Another group was caught as they were scoping out the area. "With AXIS Perimeter Defender analytics, the thermal cameras had picked up their movement and sent an alarm to our mobile security patrol and the Calgary police, who showed up to apprehend them," shares Lee. "We caught them before they could damage the fence."

Having met with success at the Highfield compound, Calgary has been extending the integrated solution to other compounds around the city.

Preventing accidents in city rail tunnels

Another problem area for the city has been vagrants sheltering in transit tunnels. "It gets really cold in Calgary in the wintertime," says Lee. "So, a lot of homeless people use these tunnels to get out of the cold and wind."

Their attempts to reside in such close quarters with moving trains inevitably lead to accidents and several fatalities. Calgary needed a way to detect trespassers, stop the trains, and send police officers into the tunnels to vacate the people.

"Since it worked so well at Olympic Park, we used the same combination of Axis security radars and PTZ cameras to monitor the tunnels for occupants," states Lee. "Now we get an alarm anytime someone walks into the tunnels. The solution saves lives and helps the city keep its train system rolling."

Increasing the city's return on investment

Technical Services plans to continue its trajectory of innovation, developing new ways to apply Axis cameras and other security technology for the betterment of the city.

Lee believes that there are endless ways a city as vibrant as Calgary can use Axis cameras to gather business intelligence, help solve problems and improve city life. "Enabling our cameras to multitask brings us a greater return on our investment," states Lee. "And it shows we're spending our taxpayers' money wisely."

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AXIS Q60 PTZ Camera Series

Robust cameras for mission-critical applications.

Thermal cameras

Temperature monitoring and heat-based detection – regardless of visibility.

Network speakers

Complete audio systems in a single unit for voice messages.

Security radars

Radar technology for wide-area detection regardless of visibility.

AXIS Perimeter Defender

High-security, scalable perimeter protection.

About Axis Communications

Axis enables a smarter and safer world by creating solutions for improving security and business performance. As a network technology company and industry leader, Axis offers solutions in video surveillance, access control, intercom, and audio systems. They are enhanced by intelligent analytics applications and supported by high-quality training.

Axis has around 4,000 dedicated employees in over 50 countries and collaborates with technology and system integration partners worldwide to deliver customer solutions. Axis was founded in 1984, and the headquarters are in Lund, Sweden.