

SECURITY TECHNOLOGY

IRIS ID STRENGTHENS PAYROLL SECURITY

A fruit and vegetable juice provider turned to iris recognition to track and pay its seasonal workforce. **p03**

HIKVISION BOOSTS CITY'S SURVEILLANCE

Municipal groups in Chicago worked together to install cameras at key locations throughout the city. **p05**

SECURITY AND THE SMART BUILDING

As security systems evolve along with smart technologies, they can improve occupant experiences. **p07**

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FORCE MULTIPLIER

Security companies like Allied Universal explore new technological territory with robots to augment guard services. **p08**



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TIME AND ATTENDANCE SYSTEMS CALL ON SECURITY

By Mohammed Murad

ONE OF EUROPE'S largest fruit and vegetable juice providers, Turkey's Anadolu Etap, faced serious problems with calculating payroll. Each harvest season, thousands of farm workers head to the company's seven large fields to pick the crops. It's the workforce's fluid nature that causes a major problem for Anadolu Etap.

New laborers arrive daily looking for work. Once hired, they might work a few days, leave for a week, and then return ready to work again. Maintaining an accurate payroll was a nightmare.

Company officials turned to their security integrator, Istanbul-based Ergosis Systems, for help in replacing the traditional card system. Ergosis studied the use of smart access cards, but found authorizing, printing, distributing, and tracking cards for thousands of on-and-off workers was still a human resources disaster. And it didn't take long for employees figure out buddy punching.

Ergosis next studied a fingerprint system. But the routine cuts and scars on workers' fingers and hands resulted in inaccurate identification and the need for frequent system re-enrollments. Also, some employees wear special environmental suits making a contactless system a better choice.

Glasses, headwear, new hairstyles, mustaches, and beards affected the accuracy of facial recognition technology. Finally, the integrator, Görkem Acarlar, suggested an iris-based system.

"Whatever we chose, the system had to be easy to operate because most of these workers are not technologically oriented," Acarlar said. "During our study, the employees caught on in no time. The system was also very accurate."

Yet there were still challenges to overcome. Located outdoors, the iris readers were subject to bright sunlight and wide temperature extremes. Electrical blackouts were frequent, making it difficult to get payroll reports to the company's Turkish headquarters.

Three-sided shelters proved effective in blocking the sun. Heaters protect the readers on those mornings with below freezing temperatures. An uninterruptable power

supply provides power during blackouts. And wireless wide area networks installed in each field transmit payroll data to satellites and then on to Anadolu Etap's human resources system.

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During the registration process, cameras captured more than 240 unique characteristics of each employee's iris, the colored part of the eye surrounding the pupil. The data was turned into small 512K templates stored in onsite computers. These encrypted files can't be reverse engineered or reconstituted to produce any sort of image. Registration, including training on how to use the system, took

about two minutes per employee. Now, as they arrive at or leave the field, employees need less than two seconds to authenticate their irises.

As employees approach the readers, proximity sensors activate the equipment. Mirror-assisted alignment and audio prompts help adjust the height to capture information from workers of varying heights. Once authenticated, the worker's name and ID, time, and date are displayed on a 4.3-inch color LCD.

Iris recognition is well suited to applications such as Anadolu Etap's. A subject's left and right iris are as different from each other as they are from any other individual's. Even identical twins have different iris patterns. Also, the iris is fully formed during a person's first year and remains unchanged through life, eliminating the need for re-enrollments. More than 10,000 laborers are enrolled in the Turkish system, with more being added daily.

"Once enrolled, they can leave whenever they want, knowing they'll be immediately recognized when they return," Acarlar said.

Ergosis completed the system two years ago, but regularly updates and adds readers as needed. The company is consider-

ing adding new iris-based systems at its other facilities.

Half a world away in El Salvador, similar challenges faced Ingenio Azucarero Injiboa, one of the country's largest mills processing sugar cane into raw sugar. Refineries around the world receive the final product.

The mill often operates around the clock during the six-month harvesting and processing season, requiring thousands of employees. For years, the mill used standard time clocks and cards. But long queues formed as hundreds of employees changed shifts. Mill officials sought help

from their security integrator, El Salvador-based Screen Check. Both fingerprint and facial recognition systems were tested. As with the Turkish farms, there was a frequent need for re-enrollment using these systems.

Ingenio Azucarero Injiboa tested an iris recognition system and it worked. Faucy Brand, Screen Check's chief executive officer, said accuracy was an important factor in the mill's choice of technology. Authentication errors for either a false accept or false reject cost both time and money.

During enrollment, mill employees could stand 10 to 14 inches away from the iris camera. The iris camera automatically accommodates for employees wearing glasses or contact lenses without compromising system accuracy. The mill's system provides a false accept rate of 1 in 1.2 million.

Brand said the system's speed eliminated the long lines associated with the punch card time clocks. Mill officials were so happy with the system, they decided to also enroll the administrative, technical, and security personnel.

Joel Moran, the mill's head of information systems development, said the iris-based time-and-attendance system replaced time cards and badges that were capable of being lost or damaged. "We now have a very precise time-and-attendance system in place," Moran said. "It has reduced our payroll processing time and administrative costs and has also completely eliminated time fraud. The result was a quick return on investment."

The clack of traditional time clock/card systems is being replaced by the quiet operation of biometric-based time-and-attendance systems. No matter if that system is installed in a high-rise office tower, retail operation, manufacturing facility, or government building, the concept comes tested and proven in some of the most remote and challenging environments. ■

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Photo courtesy of Hikvision

CHICAGO CHINATOWN CHAMBER OF COMMERCE CHOOSES HIKVISION SURVEILLANCE SYSTEM

By Heather Martin

CHICAGO'S CHINATOWN community is one of the largest in North America with a 30-block commercial area that is home to more than 10,000 residents, and an estimated 400 businesses and community organizations. A key region for tourism, Chicago Chinatown receives a large influx of people arriving by car and via public transportation, especially on the weekends.

To preserve the safety of the neighborhood, both for tourists and residents, the Chinatown Chamber of Commerce partnered with the Chinatown Parking Corporation to determine key locations throughout the district where additional security cameras could be placed for increased surveillance.

Planning took several months and included meetings with both the chamber and the Chicago Police Department (CPD). Chicago police worked with Chicago-based integrator Vintech Systems, Inc., to provide a detailed outline of where existing security cameras were placed throughout the city, in addition to providing studies and statistics on local crime rates.

“The meetings helped us gather critical information to make decisions about placement of the Hikvision surveillance cameras. We wanted as much input from the community as possible to create the safe street environment for Chicago’s Chinatown,” says Sean Duffy, project manager at Vintech Systems.

Vintech, in conjunction with feedback from the CPD and Chinatown Chamber of Commerce members, selected 18 locations to place Hikvision security cameras.

“We felt that a 30 TB Hikvision NVR would guarantee the chamber a minimum of 30 days of storage per camera. This is the minimum that Vintech guarantees all its clients. And we wanted to ensure the 18 Chinatown locations would have more than enough recording capacity,” says Duffy.

It was also critical that various parties—the parking corporation, the chamber, and a mobile security patrol team—had access to live viewing and recordings. Using the Hikvision iVMS-4200 app, team members can view the camera footage from their computers and smartphones. An iPad Pro is used by the security patrol as well.

“We have a mobile security patrol team that accesses the Hikvision security system from an iPad for eight hours per day, including weekends,” says Simon Leung, operations manager at the Chicago Chinatown Chamber of Commerce. “The flexibility of

system access through multiple platforms has helped the chamber, security patrol, and law enforcement teams locate criminal trails and accurately track activity.”

“If the security patrol sees anything suspicious, they can manipulate the camera’s PTZ feature and further investigate the situation before driving over,” adds Duffy.

Vintech recommended 18 Hikvision DS-2DF6223-AEL 2MP Network PTZ Dome cameras with 23x optical zoom. The cameras were placed high on lamp posts in parking garages or intersections to gain a wide view of the area. “With the pan-tilt-zoom feature, the Hikvision security cameras can capture views from two to three lots down,” Duffy adds.

The Chinatown chamber hosts the 32-channel Hikvision DS-9632NI-I8 NVR in its central monitoring room and monitors live footage on a 32-inch screen during business hours. Chamber staff can also access footage from their smartphones and PCs using the app. Footage can be compiled going back 30 days.

“We also equipped each individual camera with a Hikvision DS-7204HGHI-SH Turbo HD DVR, which is compatible with the PTZ cameras installed on site as local backup. Paired with the wireless system we installed at each camera location, the chamber will never lose coverage,” says Duffy.

“The camera resolution is great. We monitor the live feed at the chamber office in case we need to contact authorities. We captured a crime in progress after one of the first cameras was installed, then handed that evidence over to our local police department and to the media. As a result of this project, we have gained more of a safety confidence about the city,” says Leung.

He adds that he would like to see security efforts expand to camera views across all sectors of Chinatown. “I think Hikvision systems can deliver reliable and quality images, acting as the dedicated eyes of the Chicago Chinatown community,” says Leung. ■

HEATHER MARTIN IS AN EDITOR WITH HIKVISION USA.

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SECURITY AND SMART BUILDINGS

SECURITY SYSTEMS CAN SERVE AS A VERSATILE FOUNDATION FOR SMART TECHNOLOGIES, ALLOWING FOR A MORE COMFORTABLE AND EFFICIENT FACILITY.

By Lisa Roy

AS THE INTERNET OF THINGS evolves, smart buildings benefit from connected technologies. The next step is to explore the development of smart communities. Going beyond just a single building application, smart communities can be anything from stadiums and entertainment complexes to college campuses and healthcare facilities. These communities involve multiple smart spaces like residential living, retail storefronts, offices, and even restaurants.

When approaching intelligent building systems, automation and lighting are the first applications that come to mind. However, existing and updated security systems can serve as a versatile foundation for building a more comfortable and efficient environment.

SECURITY'S ROLE

Security's smart technologies can not only help better protect and maintain physical building systems, they can also improve occupant experiences. Often at the core of a building's essential systems, security technologies like access control and video surveillance provide visibility into building operations that help enable more intelligent analysis and decision making. For example, connecting access control with fundamental building systems, such as heating and cooling, can identify opportunities for increased efficiency. Through an integrated approach, heating and cooling sensors can use the data aggregated by access control systems to better automate temperature controls based on the number of people in a room or area. Lighting can also be integrated and more efficiently managed with access control by turning lights on and off as people enter and leave rooms and, in more sophisticated applications, by dimming or changing lighting colors based on individual preferences and settings. Similar advancements can be made to multiple buildings to make an entire community more intelligent and efficient.

STADIUMS' EMERGING SMARTS

Patrons filled with excitement pile into stadiums by the thousands to enjoy a range of events. This constant flow of people challenges security staff to provide robust safety measures without hindering the fan experience. By integrating systems, stadiums can better

protect visitors with minimal disruption, while leveraging security technology to improve the fan experience.

For instance, when an event is over, fans traditionally leave the stadium or venue all at once, bottlenecking traffic and overloading public transportation. Integrated video surveillance positioned near exits and busy parking lots can provide key data to a central command center that then pushes information out to attendees, such as live updates to navigate the most efficient stadium exit and route home. In addition, some stadiums and venues are partnering with neighboring retail stores and restaurants to amplify the fan experience with push notifications offering coupon codes or food and beverage deals. This further eases the flow of traffic by diverting event attendees across the venue community.

To better protect patrons on site, security should identify the holistic technology needs and desired outcomes for stadiums as early as possible. With deliberate, expert attention applied early during the planning phase, pitfalls can be avoided, and the security needs of the stadium can be met. For example, access control and video management systems can be integrated and interact with multiple sources of critical information geospatially such as social media feeds, automatic identification systems, and license plate recognition.

Additionally, many stadiums are working with their local municipalities to ensure that video surveillance systems are compatible with local law enforcement equipment for easier sharing of information. These integrations illustrate why facilities are connecting building systems to existing security systems, rather than starting from scratch.

SMART COMMUNITIES OF THE FUTURE

Given their undeniable value and ubiquitous implementations, security systems increasingly serve as the framework for future integrated systems. Rather than simply improving efficiencies for buildings and their occupants, connected systems now influence larger quality of life for all.

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FORCE MULTIPLIER

SECURITY COMPANIES LIKE ALLIED UNIVERSAL EXPLORE NEW TECHNOLOGICAL TERRITORY WITH ROBOTS TO AUGMENT GUARD SERVICES.

By Holly Gilbert Stowell

A bike was stolen from an isolated urban alley in a city on the East Coast of the United States. Although the area surrounding the alley was covered by surveillance cameras and the entire theft was captured on video, the perpetrators could not be identified because they had covered their faces.

But thanks to a robot patrolling in the area, much clearer video of the perpetrators, their clothing, and their interactions with each other was captured at eye-level by the machine's camera, and footage was turned over to police.

At a U.S. shopping center, a robot's thermal imaging camera captured a high-heat signal coming from a kiosk inside





Besides serving as a crime deterrent, Knightscope machines have a diverse array of functionality in a retail environment. The robots can provide a store directory and parking information, or be programmed to deliver public relations messages.

Photo courtesy of Knightscope

the mall after hours. The robot sent an alert to the security command center, which dispatched a security professional to investigate. He found a curling iron left plugged in, which could have led to a conflagration within a few hours, potentially leading to the damage and loss of assets.

These and countless other illustrations from Allied Universal customers demonstrate how robots, as a force multiplier, are changing the way security companies do business.

The U.S. Bureau of Labor Statistics projects that the number of people employed as security guards in the United States will reach 1.15 million by 2024. Robotics is also a burgeoning industry, and spending is expected to top \$135.4



billion next year, according to a report by the International Data Corporation.

Given the growth in both sectors, the union of robots and security is an ideal one, says Ty Richmond, CPP, president of integrated security solutions and technology at Allied Universal.

Allied Universal has partnered with robotics companies, including Knightscope and Robotics Assistance Devices (RAD), to deploy its guard services in various industries.

“We look at robots as we would at any other product that provides a broader and greater situational awareness capability—which is really the core and key to what we’re building,” Richmond says.

Security companies are syncing up with robotics developers to take advantage of the

Photo courtesy of Robotics Assistance Devices

autonomous technology, and are using the machines to augment everything from camera surveillance to customer interaction.

Weighing in at 400 pounds and standing about 5 feet tall, the Knightscope Autonomous Data Machine (ADM) K5 model is designed for outdoor use; the K3 is suited for indoor applications. These robots scan their environment for threats and report anomalies back to a live security team out of Allied Universal's security operations center. Another model, the K1, is designed to detect if someone is carrying a weapon.

The robots are equipped with features such as 360-degree video, thermal imaging, license plate recognition, and intercom and broadcast capabilities. These machines can be set to patrol a specific geographic area on a schedule, and can send a warning message to any unauthorized person who is in that location, such as a shopping mall after hours.

Allied Universal also partners with RAD to deploy a robot model designed for a more rugged environment, with many of the same features as the Knightscope machines. The RAD devices are useful in bigger industrial environments, such as large factories or outdoor areas that span many miles.

Steve Reinharz, CEO and founder of RAD, notes that the success of the robotics approach for security companies depends on thoughtful, meaningful placement of the machines.

"It's essential that I don't deploy robots in areas where they're going to be unsuccessful or where we're going to get bad press, or where it can negatively affect the direction of this industry," Reinharz says.

Robots have wound up in the news for less than desirable reasons. *The San Francisco Business Times* reported in December 2017 that one Knightscope machine deployed by the San Francisco SPCA, a nonprofit whose mission is to "save and protect animals," was shooing away homeless people on city sidewalks. The city ordered the SPCA to stop deploying the robots on sidewalks or face a \$1,000 per-day fine.

With movies depicting robots that are intelligent enough to be mistaken for humans, Reinharz adds that customer expectations are often misaligned when they hear the word robot. "We have to say to our customers, 'This is version one... let's just slow down, let's make sure we have successful deployments, and we do it the right way,'" he says.

Beyond a security application, robots have business value that companies are just beginning to explore. "There are various types of interaction that these products can have that are very customer-service and marketing oriented," Richmond says. For example, the machines can be programmed to give a welcome message, remind people to lock their cars, share store directory information, and more. Robots can have a public relations purpose also.

Whenever a security officer is posted at a store entrance or walking the aisles of a concert venue, people often react uncomfortably, Reinharz says, as if they have been intruded upon. Replace that guard with a robot, and the response is completely different.

"I put a security robot in that exact same position and I have throngs of people coming up to it," Reinharz says. "They want to take selfies with it, they have a thousand questions for it, they love it and they are smiling and they are talking about it, posting it on social media."

In some situations, robots may even be more suited for the job than a security officer. "There's a short list of areas where you can't argue with the fact that a robot will do better than a human," Reinharz says.

First and foremost, he says, robots can detect humans better than any person can, with their 360-degree camera views and turning capabilities. "We walk in a single direction, and our bodies are built so that when we're looking forward, we don't have eyes in the back of our heads. It's awkward and impossible to be looking 360 degrees all the time," remarks Reinharz.

Robots require few breaks, he says, though the robots might return to a charging pad when their batteries are low. "There's no chit chat...the robot is always working. It only knows how to work, it loves to work," Reinharz notes.

Cost is also an undeniable factor when it comes to robots. Knightscope rents out its machines for roughly \$7 an hour, for example, which is about half the cost of an average security guard's wages.



Photo courtesy of Allied Universal

Allied Universal has partnered with Knightscope to offer security patrol robots in a range of customer environments.

From a safety standpoint, a potentially terse or even violent situation may be much more suitable for a robot to handle, Reinharz adds. Security officers are not meant to detain people, but to move people with bad intentions

ly harmful escalation which is good for the client, it's good for the suspect, and it's good for the guard," Reinharz explains.

Richmond echoes that sentiment. "Are there better environments for robots versus human security officers based on life

Richmond cautions that robots are not replacements for human guards, but are merely an augmentation of the role that humans play in security. "The human element is still a critical and necessary part of any security program, and has to be involved in some of the subjective decision making that requires a human thought process," he notes.

And while robots are just one more tool in the security director's toolbox, the machines provide a Swiss Army Knife array of capabilities for security programs. "It doesn't mean that you're going to get rid of all your old tools," Reinharz adds. "Security robots can't replace everybody." ■

ROBOTICS IS ALSO A BURGEONING INDUSTRY, AND SPENDING IS EXPECTED TO TOP \$135.4 BILLION NEXT YEAR.

away from a customer's site or assets. The robot can approach the suspect and initiate an audible announcement for that individual to leave. A security officer in a security operations center can also take over and speak from the robot's speakerphone, resulting in a safer interaction for the officer.

"In my mind, we've avoided a potential-

safety issues? Without a doubt there are," Richmond says.

A gas plant or other toxic environment that may be deadly to a human would be innocuous to a robot, for example, "whereas a robot can patrol and monitor those areas, and if it detects one of those gases, it's able to provide awareness and make a decision to mitigate it," he says.

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