A photograph of a person walking across a crosswalk in a residential neighborhood. The person is wearing a grey jacket, orange pants, and a blue beanie. The background shows houses, trees, and a clear sky. The word "ADVANTECH" is written in white on a dark blue rectangular background in the top left corner.

ADVANTECH

Success Story

AI to Improve Public Safety in Mexico City

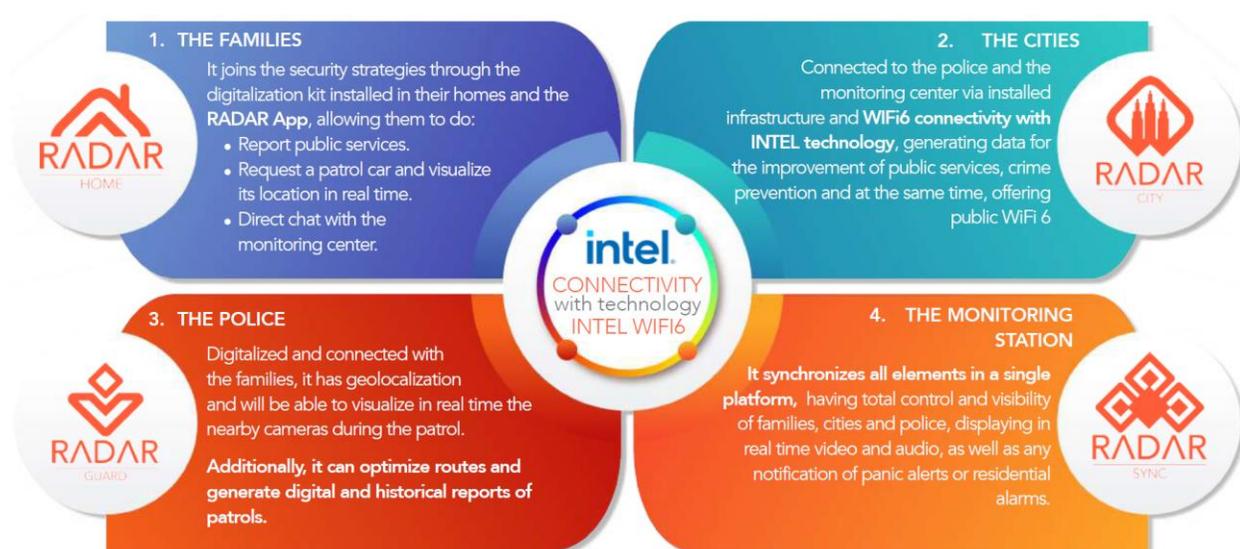
**World's First Community Driven
Smart Surveillance Solution Helps
Authorities Reduce Crime by 40%**

intel
partner
Titanium

Introduction

Security is one of the main concerns for global communities. Protecting families is also a top priority for authorities that invest a lot of resources into improving city safety. However, traditional surveillance systems show inefficiencies widening the gap between citizens and security agents. Industry leading companies including Advantech, Intel, HCL, RADAR and VSBLTY have joined forces to develop the first 360-degree smart surveillance solution that connects families to the police through an edge AI enhanced platform that enables real time response to security threats.

This world's first surveillance solution is based on a unique collaborative framework that actively involves citizens in crime prevention. The revolutionary solution is called RADAR and is built upon four pillars: HOME, CITY, GUARD and SYNC. It creates a comprehensive smart surveillance network that connects families to the police over a shared platform that increases collaboration to improve city safety.



RADAR HOME – The Families as Active Security Agents

One of the breakthroughs of RADAR is the active role of citizens in the public security strategy. RADAR provides families the opportunity to feel safer. Each citizen can request a security kit that is installed at their front door and connected to the monitoring center leveraging existing residential broadband access. The camera feed is sent back to the police station, processed and analyzed using AI techniques to create real time alerts and reports.

In addition, families have control and full visibility into their home security through the RADAR APP that allows them to report security issues, request a police patrol, chat with the police or visualize the position of the patrol car and the estimated time of arrival in real time. RADAR APP users can even request live tracking when going from point A to B. If any irregularity is observed, the police will contact the person and if there is no or negative response they will go and check if the person is safe.



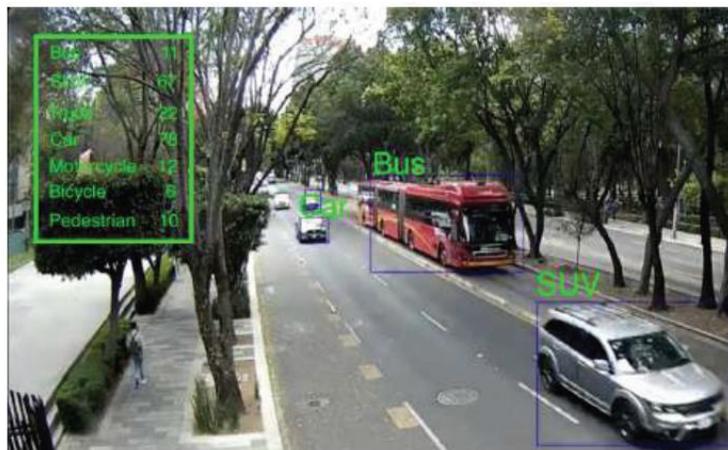
RADAR HOME helps with crime detection and prevention. In addition to real time AI and user generated alerts, the deployment of connected cameras and LED lights in residential neighborhoods is also a preventive measure to deter criminals. By actively integrating the families as part of the city security strategy, not only crime rates can be reduced but also quality of life for citizens can be improved creating a safer environment that makes them feel confident about their personal safety.

AI Enhanced Surveillance

Apart from being available to the family through the RADAR APP, camera streams from each HOME kit is sent to the monitoring center for real time AI analysis. RADAR HOME video streams are integrated with data generated by RADAR CITY cameras, the counterpart of RADAR HOME for full city protection. Smart cameras installed throughout the city and especially in busy areas

are connected through a mesh Wi-Fi 6 network sending back surveillance information to the police station. For brownfield deployments, existing city owned cameras can also be integrated into the RADAR AI edge computing platform.

At the police command and control center, video, audio and alerts from RADAR HOME and CITY cameras and microphones are integrated and analyzed in highly efficient AI and storage servers. AI generated data includes weapon detection, shot triangulation, facial and plate recognition, threat detection and tracking, traffic analysis, vehicle counting and temperature monitoring. Police agents are connected to the RADAR ecosystem through RADAR SYNC, the situational awareness platform that gives them full visibility and control over the city safety. This includes the data generated by HOME and CITY, geo-localized alarms, patrols and citizen chats. RADAR SYNC also gives them access to the fourth pillar of the solution, RADAR GUARD, which brings the police patrols into the picture, integrating them as part of the collaborative security network with real time access to all data.



Weapons detection and gunshot triangulation.



Facial recognition and threat detection.

Plate recognition, vehicle counting, traffic analysis and time analysis of parked cars.

The Power of AI & Edge Computing

The simplicity and collaborative nature of RADAR is based on a comprehensive AI edge computing framework that makes more efficient use of data and resources. The solution combines the power of AI and edge computing technologies leveraging Intel® Smart Edge, a multi-access edge computing (MEC) platform that delivers the following benefits.

Speed	Decentralization	Intelligence	Scalability	Security
A better experience	Compute at the edge	Faster analytics	Microservices that work	Integrated protection
Applications are deployed one hop from the user, reducing latency and improving user experience.	Each edge node enables applications to be deployed across the network instead of being run in the data center.	AI analytics, caching, computation and traffic routing is done at the edge, resulting in a far more intelligent and extensible network.	The MEC ecosystem is built upon microservices, which means scalability and low-impact introduction of new features into the environment	Encryption, authenticity, integrity and non-repudiation are inherent to the platform. Extensive use of asymmetric keys and TLS mutual authentication for all aspects of communication.

Intel® Smart Edge software solutions enable highly optimized edge platforms to manage applications and network functions with cloud-like agility across any type of network. It is of special interest for edge AI, smart city applications that integrate real time information as part of the decision making process. At its foundation, highly efficient Advantech SKY-8000 Series servers take care of the heavy AI edge computing. These high performance servers provide high availability to mission critical solutions while leveraging economy of scale of standard off-the-shelf products.

New Advantech Edge Servers for AIoT

The Advantech SKY-8000 Series is a range of high performance edge servers designed to balance best-in-class Intel® Xeon® Scalable processing with maximum I/O and offload density in short depth chassis. The systems are power optimized, robust platforms that provide superior reliability in critical applications including, but not limited to Multi-access Edge Computing (MEC) and 5G Open RAN. The power and cooling options along with the streamlined mechanical design make it ideal for demanding deployments requiring high performance acceleration such as the Intel® vRAN accelerator ACC100 or Intel® Movidius™ VPU for AI.

Architected around 3rd Gen Intel® Xeon® Scalable processors, the new SKY-8000 servers featured below combine cutting-edge performance with the ruggedness, reliability, and long system lifecycles required by the industry. They have been optimized for the 5G intelligent edge to support wide range operating temperature, environmental shock, vibration and dust conditions. Redundant power supplies, the ability to withstand single fan failures, redundant BIOS and firmware images with failsafe remote updates and hot swappable FRUs make the SKY-8000 Series the platform of choice for mission-critical applications requiring virtually zero downtime. In addition, their compact design perfectly fits harsh environments where limited space is available including IP65 pole mount, roadside unit or street-side cabinet options.



SKY-8132S-11



SKY-8132S



SKY-8232D

1x 3rd Gen Intel® Xeon® Scalable CPU

1x 3rd Gen Intel® Xeon® Scalable CPU

2x 3rd Gen Intel® Xeon® Scalable CPU

Rich PCI Express capacity for AI, video and vRAN accelerator cards

Up to 3x PCIe 4.0 x16 slots

Up to 4x PCIe 4.0 x16 slots

Up to 8x PCIe 4.0 slots

Ultra-short depth 11" (280mm)

Short depth 20.4" (520mm)

Short depth 20.4" (520mm)

Extreme wide operating temp
from -40°C (-40°F) to 65°C (149°F)

Wide operating temp
from -30°C (-22°F) to 55°C (131°F)

Wide operating temp
from -5°C (23°F) to 55°C (131°F)

Front accessible I/O and redundant PSU

Hot swappable, redundant PSU and fans supporting single fan failure

Redundant BIOS and FW images for fast recovery and fail-safe remote updates

Onboard BMC (IPMIv2.0 compliant) with Web Interface, KVM and Redfish

Red Hat Enterprise Linux (OpenStack & OpenShift) certified

IP65 street side or pole-mount cabinet options

Success Story

The solution described in this paper has been successfully deployed in Mexico City by local authorities. Since its first deployment, the system has improved neighborhood security by 40%. Different districts (“Alcaldías”) in Mexico City (CDMX) including Benito Juárez and Cuajimalpa have deployed RADAR with an impressive reduction in crime rate putting these “Alcaldías” at the fore front of the city public safety.

Before RADAR

Cuahtémoc y Benito Juárez lideran homicidios, robos y extorsiones en la CDMX

Cuahtémoc and Benito Juárez leads in murdering, stealing and extortions in CDMX

With RADAR 2021

IMAGEN TV: <https://youtu.be/Yv0MMnLYFd4>

Jesus Martin Interview: <https://youtu.be/DvK7PDi2SM>

Ciro Gomez Leiva Interview: https://youtu.be/FCr2ImCK_1E

Alcaldía Benito Juárez con mayor percepción de seguridad en la CDMX: INEGI

Alcaldía	Percepción de Seguridad
Alvaro Obregón	15.3
Itzapalapa	17.2
Tláhuac	22
Itzcacoatl	24.4
Benito Juárez	64.7

INEGI: <https://www.inegi.org.mx/programas/envipa/2020/>

Mayoría Benito Juárez with higher perception in security in all CDMX

Benito Juárez presenta su centro digital de vigilancia

Bi. la más segura gracias a una app

Municipality of Cuajimalpa México, CDMX: 600 monitoring devices. Adrián Rubalcava Mayor of Cuajimalpa, Municipality #1 in security in Mexico City for 2019.

BEFORE

AFTER

Adrián Rubalcava Suárez
36 min · 🌐

La Alcaldía Cuajimalpa de Morelos fue reconocida con el Premio a la Excelencia Municipal en Materia de Seguridad por parte de la Federación Nacional de Municipios de México (FENAMM) por su destacada labor en las estrategias de prevención del delito y la construcción de un modelo de seguridad inteligente.

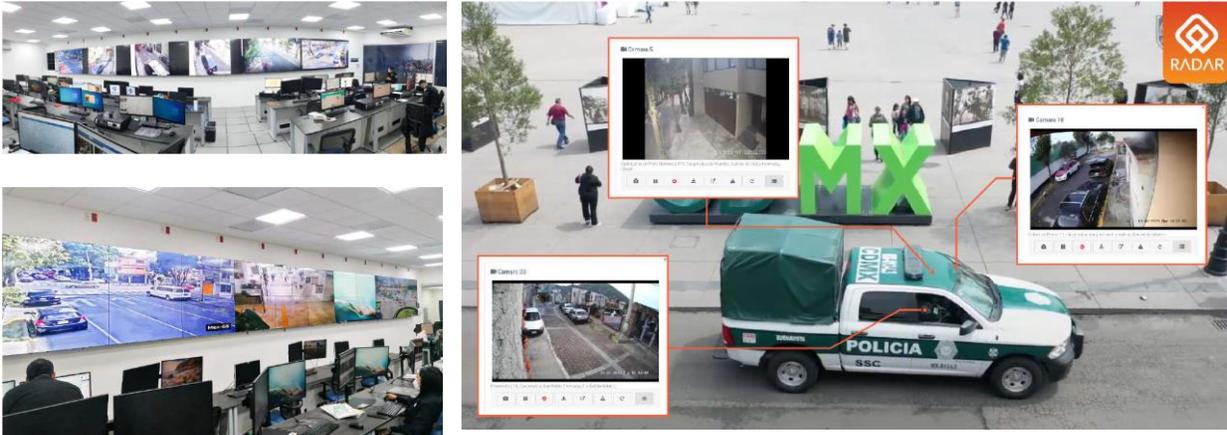
EL HERALDO DE MÉXICO
Cuajimalpa recibe premio a la Excelencia Municipal en Materia de Seguridad

👍👍👍 184 20 comentarios · 21 veces compartido

[Video Cuajimalpa](#)

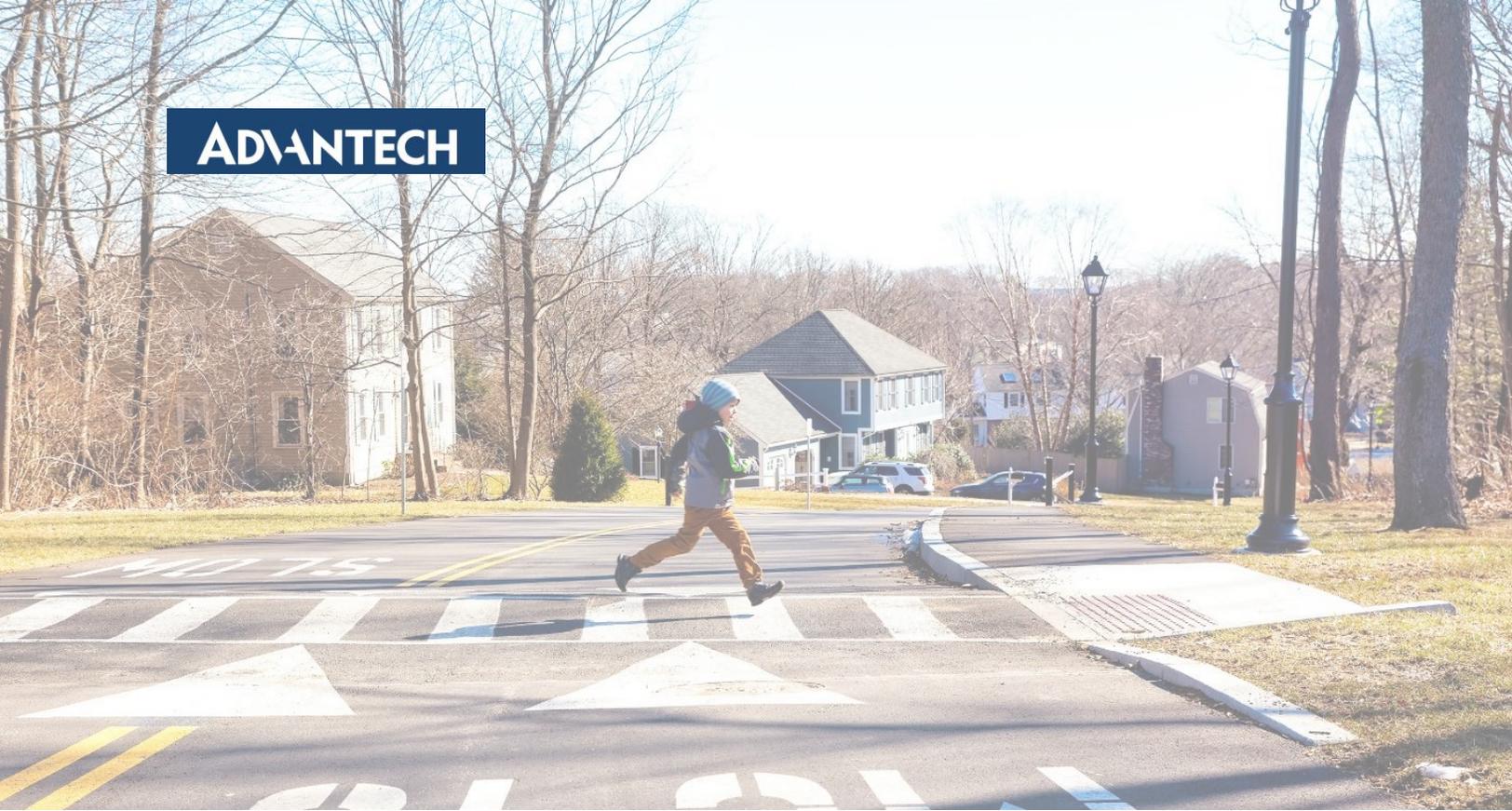
ADVANTECH

Over 8,000 RADAR kits have been deployed across the city reporting to different police stations where the command and control centers are installed. These AI enhanced cameras and microphones act as smart eyes and ears for the police throughout the city allowing them to efficiently manage city safety in tight collaboration with citizens through a shared platform that is easily accessible via a straightforward mobile app.



Conclusion

In today's hyperconnected world, social networks allow people around the globe to coordinate based on common interests. RADAR bridges the gap between authorities and citizens with the objective of improving city safety in a collaborative way. By combining latest AI and edge computing technologies, police departments are able to manage threats over a unified platform that provides full situational awareness enabling effective coordination of all parties. The system does not only reduce crime rate but also costs through efficient AI integration of cameras and microphones deployed throughout the city. By smartly connecting families and authorities, RADAR allows the police to act in a timely manner and anticipate criminal acts. Safer neighborhoods improve quality of life for its citizens helping people thrive in flourishing cities.



ADVANTECH

To Learn More about this Solution, Contact Us

Hotline Europe: 00-800-248-080 | Hotline USA: 1-800-866-6008

Email: cloud.iot@advantech.com

Regional phone numbers can be found on our website at <http://www.advantech.com/contact/>
<https://www.advantech.com/nc>

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