

Going Beyond Security

Houston takes steps to improve quality of life, public safety

By Monique Merhige



Houston, the most ethnically diverse metropolitan area in the country, is the fourth most populous city in the nation with an estimated population of approximately 2.3 million residents as of April 2020. Houston is home to 24 headquarters of Fortune 500 companies in the larger metropolitan area and continues to expand.

The Dynamics of the City

Houston First Corporation (HFC) is the official destination marketing organization for the dynamic city of Houston. HFC's vision and efforts enrich the lives of Houstonians in a few ways, beginning with promoting the region as a destination for tourism and convention business. HFC wanted Houston to become an even more attractive destination by supporting smart city initiatives and helping set the standard of what a smart city truly means.

The city of Houston used data and emerging technologies to help improve the quality of life for citizens by sharing important information with the public, driving economic growth, and building a more inclusive society. Piecing together the right technology partners and building upon the existing infrastructure to help accomplish its goal was the next step in going beyond security. Houston is shaping the future of "smart cities" with its forward-thinking approach when it comes to public safety and security.

It all began in 2017, the year that the city of Houston hosted Superbowl LIVE, when Milestone Systems was requested to take part in the design of a supplemental camera system to be deployed during the Super Bowl LIVE Event. The video surveillance cameras installed were from Axis Communications and included a mixture of PTZ dome cameras, thermal cameras and the Axis F series modular cameras.

A permanent installation was implemented after the Super Bowl to support the Houston Living Lab (HLL) and repurposed to monitor the Toyota Center,



Photography by Telmo Machado



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Discovery Green Park, the George R. Brown Convention Center, and intersections near the venues. HLL is a collaborative effort hosted by Houston First that leverages big data and evolving technologies to deliver capabilities to public safety professionals. HLL helps city entities test solutions until they are proven and allows technology partners to validate their technology in an active environment.

Acting as an R&D site that offers live public safety technology used during real world events, the city was able to effectively test the latest technologies for future deployment or share best practices with private security professionals within the Houston area.

Located in the George R. Brown Convention Center (GRBCC), HLL was initiated out of necessity for Super Bowl LI (2017) and ended up developing into a robust public and private partnership for technology discovery and use.

“The relationships built at the HLL were instrumental in helping us support the needs at other high-profile sites throughout the city that were identified with concerns regarding general public safety and quality of life,” said Jack C. Hanagriff, program manager at the Houston Office of Public Safety & Homeland Security.

This included the Houston Safe Park Program, with deployment of public safety technology at Memorial Park Golf Course for the Houston Open, and a deployment at the Metropolitan Multi-service Center (West Gray Adaptive Park) to support quality of life concerns and voting site security, as well as several “spin

off” initiatives that support smart city endeavors throughout the city. At the GRBCC, the needs were more diverse as the focus was not only on public safety and monitoring aggressive behavior in and around the convention center; but proactively improving traffic at intersections and managing operations in the parking garages and throughout the convention center.

Smart City Expands its Capabilities with a Smart VMS Solution

The Houston Living Lab was looking for an on premise software solution that could easily bring together some of the latest technologies. Milestone’s open platform made it the ideal choice for most of Houston’s city-wide deployments. This created seamless integrations to cutting-edge security technologies such as: gunshot/aggression detection, perimeter surveillance, wireless transmission radios, video surveillance, advanced audio analytics, video analytics/artificial intelligence, weapon & drone detection software, traffic flow/incident detection, and thermal & UAV detection.

“After converting to the Milestone VMS platform in October 2019, we forged a seamless partnership with Milestone,” said Timothy Smith, vice president of Information Technology at Houston First Corporation. “Technology can only take you so far without communication. We needed the right technology partnerships and integrations that was a real game changer for us.”

Houston city officials have relied on Teksys as a trusted security advisor for more than a decade to help create its public safety network. Over the last 11 years, Teksys maintained and optimized the city-wide video network, which included working with some of the best-in-breed security technology partners in the industry such as Axis Communications, Hanwha Techwin America, and Milestone Systems to name a few.

“We are proud of being a trusted partner for the city of Houston, where we started our relationship as part of the team designing the Public Safety Video Network & continued to expand our role supporting major events like the Super Bowl LI, Final Four, Houston Open, etc.,” said David Madrigal, senior engineer at Teksys.

When it came to design and installation, Houston Public Works (HPW) handled a seamless deployment of all technology at the three sites. HPW is the largest and most diverse public works organization in the country and is responsible for streets, drainage, producing and distributing water, collecting and treating wastewater, and permitting/regulation of construction.

High-profile City Sites take it Beyond Security

The George R. Brown Convention Center/Houston First opened on the east side of downtown Houston on Sept. 26, 1987. The building was named after internationally recognized entrepreneur, engineer, civic leader and philanthropist George Rufus Brown (1898-1983), who donated six of the 11 blocks necessary to build the GRBCC.

With 1.9 million sq. ft. of exhibition, meeting and registration space; GRBCC is one of the 10 largest conference facilities in the United States that hosts more than 40 major conventions and 200 smaller events annually. In 2019, the convention center normally had on average 1.5 million visitors per year, and nearly 500 staff onsite during a trade show. With Discovery Park right across the street, visitors are attracted by the shops, restaurants, and entertainment venues; and the city has created a vibrant, safe convention district that is quickly evolving into a true beacon of security.

In the future, Houston Emergency Services would like to leverage security content from various locations; it starts with empowering stakeholders with robust capabilities and the ability to share data in real time. This prompted a Security Operations Center (SOC) to be built in the GRBCC that will allow owners and operators to initially manage and validate an event and then share when needed to



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the appropriate first responder.

The SOC combines the best-of-breed technologies with robust mission critical applications. Dell Technologies provided the latest screening technology that delivers 4k content within the network for remote viewing. The SOC will allow Houston First and Houston First Responders to focus on solving critical challenges, enabling powerful decision making, and improving situational awareness.

To help facilitate this, a situational awareness platform from Haystax was deployed allowing the city to share data across jurisdictions and disciplines. The system provides a visual map interface, and when combined with the VMS and Dell's screening technology, both public and private public safety professionals can easily leverage the technology to make important decisions. On the map, viewers can see police, fire, emergency medical service calls, road hazards and more key resources in the area.

The SOC will be a crucial step in helping the city monitor activity and deter any threats to public safety, while also protecting its citizens in and around the popular entertainment district.

Improving Situational Awareness

The Metropolitan Multi-Service Center - West Gray Adaptive Park (MSC) in Houston was looking to improve situational awareness and quality of life for people with disabilities; ultimately helping people in need of immediate assistance. The cen-

ter was built in 1982 and transferred from the city's Health Department to the Houston Parks and Recreation Department in 2006. H.P.A.R.D.'s Adaptive Recreation Section was created at this time to offer a variety of recreational, sporting and quality of life programming for people with disabilities.

With a capacity of 350 people, the center's mission is to be a leader in providing meaningful opportunities for citizens to participate in fully accessible sports, recreation, and wellness activities.

In addition, the center is also used as a voting site for local, state, and federal elections. Opening as early as two weeks prior, it serves as an early voting site, which allows up to 8,000 voters per year.

"It was important for the city to be able to monitor not only security issues, but also "quality of life," said Gabe Cazares, director of the mayor's Office for People with Disabilities. "Having 'real time' alerts for falls and other items needing immediate assistance is an important aspect in providing public service and quality of life for Houston's citizens."


A combination of Hanwha's Wisenet P Series AI cameras, X Series, and Q Series were installed into the Milestone XProtect® Expert software platform to provide video coverage of all entrances at the center as well as areas where visitors/patrons could wander and find themselves isolated. Hanwha's P series AI cameras were deployed in the main lobby and public spaces to provide 4K video footage as well as object detection and feature extraction, allowing for forensic search for gender, age, clothing color, bag, glasses and masks. This added an extra layer of protection in case an individual wandered into an isolated area that was not staffed.

Houston Gets a Technology Infusion

The city wanted to be able to identify dangerous situations and be proactive rather than reactive to help mitigate risks. They now had visibility into all different types of situations such as vehicles driving the wrong way, large crowds gathering in an area, or even listening for glass breaking, car alarms, gunshots, or aggressive behaviors.

Smart City and Public Safety go hand-in-hand when improving public safety and quality of life. Often, new and emerging technologies were deployed at a moment's notice. Houston has relied on key partnerships from Axis, Milestone, Dell, Siklu, Cradlepoint, Teksys, and Verizon to develop and implement rapid deployable solutions.

The right data is critical in smart decision-making and Houston is shaping the future for smart cities. Smart cameras with the ability to share useful data are extremely important. With 1 billion video surveillance cameras currently deployed around the world; video analytics is the next step to create even safer cities.

The relationships developed by city staff and the partners during this project are invaluable and have helped push the industry forward. This smart city initiative has changed the game in video surveillance—it shows that security can be limitless with the right technology partners in place. 

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Enabling smarter devices through AI analytics allowed the video cameras to serve multiple purposes and provide actionable, useful data instead of just viewing an incident. Technology partners that provided technology for this project included:

EAGL's gunshot detection, deployed in the HLL, inside the GRBCC & outside the pedestrian walkway and Discovery Green.

Razberi is an open video surveillance platform that was deployed at both sites.

Siklu's wireless connectivity radios and wireless infrastructure were deployed at GRBCC.

Cradlepoint combines unified edge security with LTE and 5G cellular networking technology – provided routers at MSC

Sound Secure – Donated microphones for MSC

Verizon Wireless – provided wireless backhuls at both sites - connects broadband sites to the core network in a wireless manner

Analytic Support at **GRBCC:**

- Citilog -Traffic Incident Management
- EVOLON TECH - develops advanced perimeter surveillance
- Athena - Weapon Detection
- 911 Security - UAV Detection
- Agent Vi - Behavior Analytics
- Sound Intelligence - Aggression Behavior