



Montebello Los Angeles USA

Integrated systems including MOBOTIX technology provides instant video surveillance and sensor data for faster response to incidents.

Montebello is located near the center of the Los Angeles metropolitan complex with an estimated population of around 64,000 people across an area of 8.373 sq/mi. Public transportation is provided by the city-owned Montebello Bus Lines (MBL); the service is the third largest public transit agency in Los Angeles County with an annual ridership of over 8.2 million. Starting in 1931 with a fleet of four buses, the agency now has a fleet of 66 buses, including 38 hybrid gasoline-electric buses and serves 14 communities.

As part of its duty of care, for many years the MBL has used CCTV as part of a package of measures to keep both its passengers and staff safe. As a consequence of its diligence, the American Public Transportation Association (APTA) has recognised Montebello Bus Line's service awarding the APTA's Outstanding Transport System Award and APTA's top Silver Safety Award in 1999, as well as the Achievement Award in 1997, 1998, 2000 and 2002.

Improving transit safety

However, in recent years, the legacy CCTV systems on each bus were starting to show its age. As David Tsuen, Information Systems Manager for MBL explains. "We needed to replace our analogue video systems that were outdated and error prone. Another problem we wanted to address was the inability of the system to allow public safety officers to respond immediately to an active situation."

The existing system and many others that Tsuen and his team evaluated were all reactive requiring the operations teams and safety officers to pull incident videos after an event had occurred. For an organisation keen to ensure the highest levels of customer safety, they started to look at more innovative alternatives.

"We needed a video security solution that was more intelligent," explains Tsuen, "A video system that could help us deliver a quicker response to active situations by processing external elements

to analyse, predict and ultimately alert safety officers quicker. Our goal was to implement a video security solution that would work for us, not us having to work around its limitations."

The team at MBL created a wish list of features that the new system needed including the ability to instantly view video from any camera remotely via a mobile network. A simple to use management system for both video surveillance and better bus management along with a simple method of archiving and searching video of any incidents that may be needed for evidential purposes or for legal actions.

Designed for the road

Based on the desire to use as few cameras on each vehicle as possible along with the need for a system rugged enough to survive the continual high vibration, heat and dust for 24 hours a day internal and external use; MBL selected MOBOTIX cameras and connectivity solution as the core element of the project.



MOBOTIX also had the relevant application programming interfaces and ability to integrate sensors to measure shocks, light and noise level, temperature, GPS position, GPS directions and GPS velocity. The sensor readings are essential to trigger automated alerts to the control room for example if a bus is involved in an accident or has deviated off course.

MBL worked closely with Transit Security Systems Inc., a specialist in vehicle surveillance and management systems to develop a Unified Management Platform that included a video viewing and archiving solution along with tracking and incident alerting capabilities. The platform also manages how video footage is stored by Cloudian, a cloud based storage service which provides richer metadata on each videos to allow MBL to search for video based on more criteria, such as geographical location as well as traditional date and time criteria. In addition, Cloudian serves as the connection to analytics, not available in traditional security systems.

Streamlined design

At the heart of each bus deployed with the new video surveillance system are five S15 FlexMount camera cores each with two video sensors attached. The configuration uses 6 megapixel video cameras sensors able to capture rich detail of the faces of people on the bus and external events, even vehicle license plates. The layout has two video sensors covering the interior of the single decker bus, two video sensors covering the passenger doors and driver cabin along with 6 external video sensors covering a 360 degree arc around the bus. The system uses a mix of day and night video sensors to ensure 24 hour coverage and a single thermal image sensor that can provide visuals even during complete darkness or extreme weather conditions.

To simplify connectivity, each camera core uses a power-over-Ethernet (PoE) network switch along with MOBOTIX IO Box technology to reduce the amount of cabling needed for each by 50% when compared to a legacy analog video CCTV solution.

The system is connected to a local 2TB NAS for local video capture and a GPS receiver for accurate time and location data. When on the road, each bus is connected to the MBL central operations desk via the LTE (4G) mobile network that allows remote viewing of any camera on demand or in the event of a driver raising the alarm. When each bus returns to the depot, all video captured since the vehicle's last visit is uploaded using Wi-Fi connectivity and moved into its cloud based storage for archiving and , if needed, further analysis or evidential purposes.

The MOBOTIX elements have been certified to EN 50155:2007, an international standard covering electronic equipment used on rolling stock and railway applications including temperature, humidity, shock, vibration, and other parameters. In addition, one MOBOTIX IP video camera does not require more than 4-5 watts and has no moving mechanical parts to dramatically increase reliability.

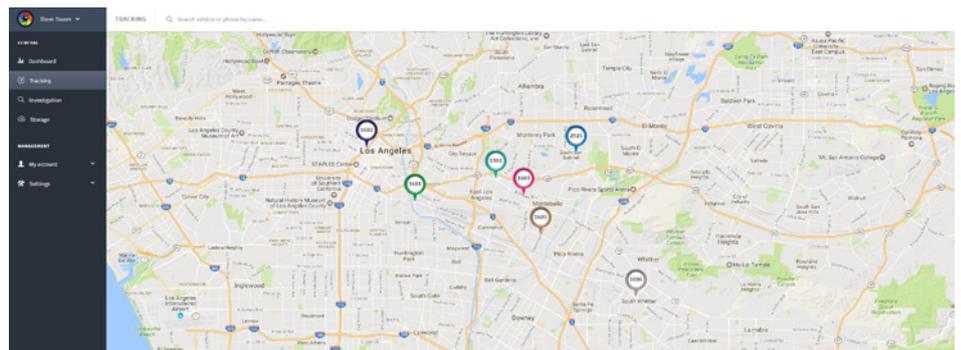
Through the MOBOTIX Application Programming Interface and Software Development Kit, the



video remote surveillance capability has been integrated by Transit Security Systems into its Unified Management Platform to provide a pin point display of every MBL vehicle. Compared to the old system, MBL is now able to instantly pull up a view from any bus with just a click of a mouse as well as search through historical footage to quickly find any incidents or following a complaint or request from law enforcement. The system is also able to automatically generate alerts based on sensor data if the bus is involved in an incident.

So far, the system has been installed on 7 buses and the response has been extremely positive. As Tsuen says, “New security threats are rising around the world. We need to change the way we do security because the old way just isn’t working.”

The success of the project has prompted MBL to equip more of its bus with the new video surveillance system as older vehicles are replaced over the course of the next few years.



MOBOTIX has developed and manufactured IP video systems, video management and analysis software in Germany since 2000.

MOBOTIX stands out for its **high level of reliability**. All outdoor cameras are subjected to a stress test for temperatures between -30°C and +60°C (-22°F and +140°F). Without additional components, without heating or cooling and with no moving parts (for example auto iris), they are virtually maintenance free.

MOBOTIX delivers a **perfectly matched package**, starting with the microSD card for storage management and HD audio (microphone and speaker) with VoIP telephony through video analysis, a professional video management system and motion detection software reducing false alarms.

The **decentralized architecture** means that a central computer is not required and the network load is minimal. The intelligent cameras from MOBOTIX process and store image data themselves, trigger events and, in the event of remote access, manage the frame rate and resolution depending on the available bandwidth.

The **6MP Moonlight sensors** and complementary **thermal imaging technology** ensure reliable detection of moving objects, even under the most challenging light conditions and over long distances. As a result, it is possible to cover large areas with just a few cameras. Less power cabling, less IT infrastructure and fewer additional light sources are needed. MOBOTIX cameras are powered using standard PoE and do not require more than 4-5 watts.

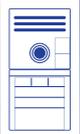
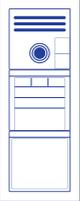
An intelligent IP video system from MOBOTIX allows you to **reduce total costs**. The investment pays for itself after a short time and the free-of-charge software and updates ensure it is a future-proof investment.

Outdoor Dual Lens			Thermal	
M15/16 AllroundDual	S15/16 FlexMount	D15/16 DualDome	M15/16 Thermal	S15/16 DualThermal
				
Robust for extreme conditions	Flexible dual camera	Modular dual camera	Thermal dual	Thermal dual

Outdoor Single Lens			
M25/26 Allround	S15M/26 FlexMount	Q25/26 Hemispheric	D25/26 Dome
			
Robust for extreme conditions	Discreet, video analysis	Discreet, video analysis	Modular Fix dome

Indoor			
i25/26 Panorama	c25/26 Hemispheric	p25/26 Allround	v25/26 MiniDome
			
180° hemispheric	Discreet, video analysis	Modular ceiling camera	Vandalism camera

Door Modules			MxDisplay+
Camera	BellRFID	Keypad	Remote Station
			

Door Sets			
Double Frame		Triple Frame	
			

Retailer information: