LOUROE ELECTRONICS®

World Leader in Audio Monitoring Technology Since 1979

THE VALUE OF AUDIO FOR **SURVEILLANCE APPLICATIONS**

white paper

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Executive Summary

Audio is a foundational part of an effective security, monitoring, and surveillance system. As the market for audio continues to grow, new applications for the technology are demonstrating how organizations are streamlining security and day-to-day business operations. Like video surveillance, audio monitoring devices offer many advantages—from additional evidence capture to alarm verification to improved real-time response. This white paper discusses how audio enhances the overall functionality of security solutions as well as common use cases, monitoring regulations, and best practices for adding audio to surveillance systems.

While video surveillance and access control are often seen as the "bread and butter" of security installations, they leave a noticeable void. This gap in situational awareness is best filled through the inclusion of audio monitoring. Sound provides crucial evidence, not only capturing information about security events that take place, but also about the motives behind the actions captured on camera.

Because of this, an increasing number of systems integrators are utilizing audio to optimize video surveillance systems for their customers. An industry report from Security Business found that nearly 20% of integrators had added audio detection to their service offerings in 2019. This shouldn't come as a surprise. Audio monitoring solutions are an attractive, multi-purpose offering for any systems integrator, as audio can provide additional security, two-way communications functionalities, and improve operational efficiency for customers.

The Use of Audio Technology in Everyday Life

For people today, audio has become an integral part of everyday life. From voice-command virtual assistants, like Alexa or Siri, to smartphone applications, sound capture is all around us and plays a powerful role in many popular technologies. People typically do not watch TV without sound. Similarly, why would sound be left out of potentially crucial surveillance video?

As societal comfort with audio has shifted, so has its popularity in security deployments. End users are requesting audio for their surveillance projects and are increasingly using audio for evidence capture, dispute resolution, quality assurance, and business intelligence. One specific area that audio is seeing heightened demand is in remote monitoring applications for alarm verification.

Reducing False Alarms

One of the key value propositions of audio is secondary source alarm verification. False alarm rates have plagued police departments across the nation, with studies finding that as many as 98% of all alarm events are false.ii These false alarms are not only dangerous, but can also be costly, resulting in hefty fines for customers.

The issue may not be caused by systems integrators, but they can choose to deploy technologies like audio that are part of the solution. Adding sound capture devices to surveillance systems is even recommended by the Partnership for Priority Verified Alarm Response (PPVAR) to reduce false alarms.(iii) Deploying a video solution equipped with audio ensures that a microphone will record sound the moment an alarm is triggered. In some cases, pre-determined sounds like breaking glass can even trigger an intrusion alert. The sound captured at the time of the event can be sent directly to a monitoring center, where trained personnel can listen, as well as analyze live audio and video footage of the event in progress. With this data, an informed decision can be made about the validity of the alarm.

If the alarm is in fact valid, all evidence gathered from the scene is then passed along to law enforcement within minutes to prioritize a response. However, if monitoring center personnel determine it was just a nuisance alert caused by wildlife, customers will save hundreds of dollars by avoiding unnecessary police dispatch.

Vertical Use Cases for Audio

Outside of simply complementing its video counterpart or verifying alarms, audio holds inherent value or security deployments across a variety of applications and verticals. From enhancing safety to optimizing employee training, audio's role is continuously
expanding.

Education: For schools, audio solutions enhance the safety of both students and faculty members. Installing a Louroe Electronics A-ML microphone in a school's main office allows security officers to hear and see what is happening when a hostile guest enters the room. This substantially improves a security team's situational awareness, incident response, and ability to quickly assess how to de-escalate the situation. Speaker microphone solutions, like the AOP-530, facilitate two-way communication at access control points to streamline visitor management, while the TLO-A aids with campus-wide notifications by disseminating important messages.

Healthcare: At hospitals and clinics, two-way audio systems like the TLM-W and AP-1TB from Louroe Electronics ensure remote communications for patients in isolation. This helps to protect doctors and nurses from virus exposure and saves direct patient contact for only necessary care visits. For sleep study or medical research labs, audio can be used to validate test results and provide crucial data to researchers during medical studies. From a security perspective, studies show violence against healthcare employees is more common than most realize, with 75% of the nearly 25,000 workplace assaults occurring in healthcare settings annually.iv Microphones with sound decibel-level threshold alarming placed in healthcare lobbies can serve as early threat detection, alerting security officers to loud, aggressive vocal patterns so they can respond immediately to mitigate high-risk scenarios.

Transportation: Air, sea, and rail sectors can improve critical monitoring through the inclusion of audio. When mounted near passport check podiums in airports, Louroe Electronics' Verifact® L-DT monitors traveler-agent interactions for heightened awareness. Installed on high ceilings in designated waiting areas for travelers, the Verifact® B-6 allows security officers to look for verbal cues that may indicate suspicious behavior. Using directional audio devices like the Verifact® K, a bus driver can hear what happens behind him or her and intervene to stop instances of bullying or rowdy behavior.

Retail: Audio can be used to observe employee-customer interactions at point-of-sale terminals so that managers know where to focus their training or when to reward an exceptional employee. Having a verbal record of these transactions can also help eliminate "he said, she said" arguments between employees and guests. During virus outbreaks, Louroe Electronics' two-way AOP-530 or ceiling-mounted AOP-550 paired with video surveillance, AI software, and access control systems can help brick-and-mortar retailers enforce social distancing protocols. Cameras equipped with AI can scan customers at a store's entrance, checking for mask compliance, and counting those who enter. If the analytics detect a customer who tries to enter the premises without a mask, the entrance doors can be shut and locked while an audio message is played requesting the customer wear a mask if they wish to enter the store.

Law Enforcement: For police departments and correctional facilities, Louroe Electronics' tamper-resistant Verifact® D-V is ideal to install in suspect holding locations or other common areas. With this device in place, a security officer can use audio clips to provide accountability for the actions of correctional officers and inmates. Audio is also used to validate claims or incident reports. The ASK-4® 631 Kit, an audio system featuring an omnidirectional microphone and a base station with a mute switch, is optimal for interview rooms to record spoken evidence for court proceedings. The muting feature supports attorney-client privilege, allowing attorneys to meet with their clients in interview rooms without having to be relocated.

Industrial: For remote industrial facilities, like oil wells or drilling sites, operators often require increased surveillance and operation. Utilizing a Louroe Electronics speaker microphone, like the TLO-A, alongside video cameras strengthens crime deterrence efforts. The two-way audio device allows a remote operator in a control room to speak with suspects in real time or play a pre-recorded message to deter theft or vandalism.

Audio and the Law

The top inquiry that systems integrators have surrounding audio monitoring is legal compliance, due to misconceptions about the regulations for audio. The use of audio monitoring is very much legal in the United States where there is no expectation of privacy, such as in a public space. Parks, town squares, outdoor shopping centers, and street intersections are all prime examples.

The U.S. law—specifically Title 18, Chapter 119, Section 2511(2)(iii)(d)— also allows monitoring if prior consent has been given. Consent to monitoring can be explicitly expressed or just implied through actions. When places like medical offices, retail stores, and airports display signage stating audio surveillance is taking place, the signage removes the expectation of privacy. This means if someone chooses to remain in that space their consent is implied.

Security professionals should also recognize that states have different policies on whether consent is required from only one party or all parties involved. For more information on this subject, refer to Louroe Electronics' Audio and the Law in Your Area map.

Best Practices for Adding Audio to Surveillance Systems

Another common question from systems integrators is how to add audio to an existing surveillance system. When looking to install audio, there are two options: utilizing a camera's built-in microphone or integrating a camera with an external microphone. Despite the convenience, the built-in microphones found in most cameras do not yield optimal sound capture. For systems integrators interested in adding reliable, high-quality audio that can be used in investigations or court proceedings, it is best to choose external microphones that can be carefully positioned and deployed to maximize sound pickup.

Installing audio systems does not have to be difficult, but following a few best practices can make the difference between adequate and excellent audio results. Below are some recommendations.

Understand Federal and State Regulations: Removing the expectation of privacy for audio monitoring doesn't have to be complicated; simply include signage. After installing microphones, systems integrators should include clear and visible signage at all points of entry that communicate audio and video surveillance is taking place on the premises. Furthermore, talk with key stakeholders to ensure they know the purpose of installing audio monitoring is to increase safety and crime prevention. For specific monitoring legality concerns, speak with an attorney.

Define Audio Needs: Is the end customer only looking to capture sound from the surveilled scene? Or will there be additional uses for this technology such as two-way communication, mass notification, or workplace safety? These questions will determine whether a simple microphone is needed, or whether the end user will require bi-directional audio devices with talk-back functionalities.

Determine Line Level or Mic Level: Microphones give off two types of voltage: line level output and mic level output. Mic level microphones are omni-directional, require 1.8-4.5V, and can plug directly into an IP camera that supports mic level audio output. Line level microphones are usually omnidirectional, with a few exceptions, and feature a built-in preamplifier for producing line level audio output. Typically, line level microphones are the most deployed option as the audio signal is amplified (and thus stronger) and features reduced gain for lower ambient noise and better sound clarity. Most network cameras also support line level input. Either way, make sure to select a microphone that has an output level that matches the camera's input level.

Consider Microphone Location: When designing the layout of an audio solution, it is important to think critically about the areas that audio would be most effective. One way to do this is by utilizing acceptable camera installation guidelines as a model for appropriate audio locations. Entryways, reception areas, point-of-sale terminals, stairwells, and parking lots are all common spaces that benefit from audio.

Select the Right Form Factor and Features: Consider the exact location the audio devices will be installed. When mounting microphones on a ceiling it is important to know whether the ceilings are standard height or high/vaulted. This will determine whether a standard microphone is needed, or if the deployment will require a device featuring an extended drop-down microphone cable, like the Verifact® B, to capture the sound below. Will the microphone be deployed in an environment where it will demand vandal-resistant housing? Will there be enough background noise that a microphone with ambient sound reduction is required? These questions can help integrators select the best external Louroe Electronics microphone and form factor for the installation.

Define Power and Audio Playback Source: When deploying line level output microphones, a power source will be needed. Consider using a Louroe Electronics audio base station, which not only powers the device, but also provides playback features and interfaces with CCTVs and DVRs. This process can be simplified by selecting an audio monitoring kit from Louroe Electronics, that comes equipped with both microphones and base stations.

Plan Audio Configuration: One of the most common options when deploying audio is to connect the microphones directly into the camera, as a plug-and-play setup. This method is simple and involves running the microphone cabling alongside the camera cables. However, it is important to select the correct audio settings on the camera itself, such as turning “on” audio level or adjusting the bitrate, gain, etc. Digital microphones connect directly to an Ethernet port, via a CAT5/6 to an RJ45 jack. Locate the device name and IP address using the discovery tool, and use the online portal to set a username, password, and additional audio settings. If the microphone is connected directly to a DVR or NVR, apply 12Vdc to the microphone. Then, connect the microphone directly to the audio in the storage device. Lastly, make sure the correct audio settings are selected on the DVR/NVR, such as “line in”, bitrate gain, etc.

Integrate with VMS: Ensure the current video management software being used by the end user supports the type of audio functionality, like bi-directional audio, that will be installed. Next, tailor the audio settings within the VMS. For example, though a microphone may be plugged into one camera, integrators can associate it with multiple cameras within the VMS. This allows video and audio from a scene to play, no matter which camera is being viewed by the operator.

Test the Solution: Once everything is set up, the final step is to evaluate the audio pickup and make adjustments when needed.

Key Takeaways

As audio continues to see strong adoption across the security market, it is crucial that systems integrators and industry leaders alike stay ahead of the curve. Security personnel can no longer afford to turn a deaf ear towards audio when it comes to delivering a complete, all-around security solution. It's time to recognize audio's equally critical role as a technology that enhances the entire security system.

End Notes

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About Louroe Electronics®

Located in Van Nuys, California, Louroe Electronics® has been the world leader in audio monitoring technology since its inception in 1979. Recognized globally, Louroe Electronics' products are used in over 60 countries and are utilized by both the private sector and government.

The company's Digifact™ and Verifact® line of microphones, complementing base stations, and communication accessories, provide mic and line level output to interface with various digital electronics. For over four decades, Louroe Electronics® has maintained rigorous standards to ensure their products provide reliability, durability, and excellent performance for its customers' needs.

For more information about Louroe's audio solutions, visit www.louroe.com or call (888) 273-8578.

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