Why pair smart **EARS** with smart **EYES**?
By: JALUD Embedded

When any threatening situation occurs, our brain calls on all our faculties to assess the danger, "Was it a car backfiring or a gunshot? Was it a window breaking or someone throwing a glass? Was that voice shouting in anger or shouting in joy?".

The reaction time to any dangerous situation will depend on our perception, processing, and response. If any part of these is altered, reaction time will also be affected.

When a violent situation occurs, we often hear it before seeing it, such as gunshots, loud voices, or breaking glass. That sound triggers a response in our body that makes us act, find safety, and that is when we call the emergency telephone for help.

When calling for help, an operator answers your call; the operator evaluates the situation by asking questions, assessing the severity, and estimating your location. All of it can take up to 7 minutes or more.

The standard process of calling for help can be **accelerated using modern technology and artificial intelligence**, which would help us reduce the time to **less than 5 seconds**.

7 min. > 5 sec.
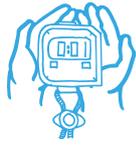
The era we are living with technology at our side has brought changes to our habitual way of doing things in our lives, from security checks at airports to the ability to communicate with the devices around us.

One example of this is the adaptation of companies to remote working and video chatting to fulfill their needs; another is the need to ask our cars for directions or even verbally ask our phones for almost anything.

Our growing comfort level with audio and voice technologies is also changing how we view and enhance security in environments as diverse as healthcare, schools, public parks, and even cities.

As the security industry embraces emerging technologies that make our world safer, intelligent audio communications are prepared to offer integrated and comprehensive solutions that are now seen and heard as a critical component of any security system.

Let us give you some ideas; many companies have security operations centers (SOCs); think of those SOCs and the security officer monitoring the video cameras. A security officer's distractions are many, not to mention phones; a temporary distraction from the monitoring screens can be key to a situation that deserves immediate attention.

Adding audio and intelligent communications to the suite of security solutions deployed in SOCs is not only a force multiplier but also offers several other advantages, such as instant situational awareness.
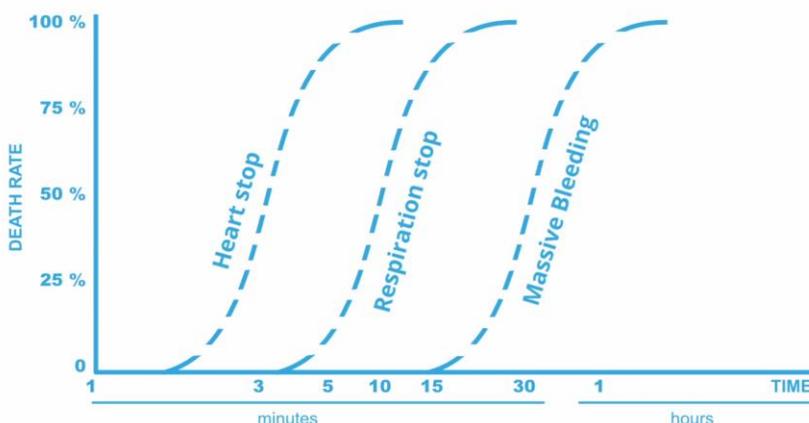
Listening is believing; listening is the key to everything we do as human beings. Another example is seeing someone running; this only tells you so much. But if that person is screaming in fear while running, a security officer knows the best way to respond and can take immediate action. Sound drives the initial response. A sound that accompanies the video gives responders more information and creates better situational awareness in a security setting.

Sound detection is a technology that listens for a complex combination of characteristics, from decibel level to energy at different frequencies over time. It is programmed to ignore background noise such as traffic, conversations, etc.

With this idea is how the **Sound Event Detector (SED)** was created; this is a new tech solution that uses a proprietary algorithm that is driven by AI and machine learning technology that can detect, classify and alert these unwanted events, helping to minimize the risk of false positives in hazardous situations in a difficult environment.

Audio acts as a force multiplier when integrated into a security system, and the SED's exceptional accuracy helps address threats quickly and will help any business to avoid wasting resources on false alarms. It can't take safety, security, and business operations to the next level.

The SED can be integrated with other technology systems to create a complete security solution and provide a new form of passive security by adding smart EARS to the existing security solution and even allowing for de-escalation of some situations before they become events.

The benefits of having SMART EARS

So, you might be wondering, "what is the benefit for me of having smart ears?". The benefits of integrating audio and intelligent communications are varied, and it will also depend on the area you would like to apply this solution.

The SED is a solution that is ready to operate in indoor and outdoor situations. Some areas that can be used are Smart Cities, Banks, Healthcare facilities, public spaces such as squares or parks, and many others. This solution can detect:

- Human scream: +150 m
- Gunshot: +250m
- Glass breaking: +60m
- Bomb blasting: +400m
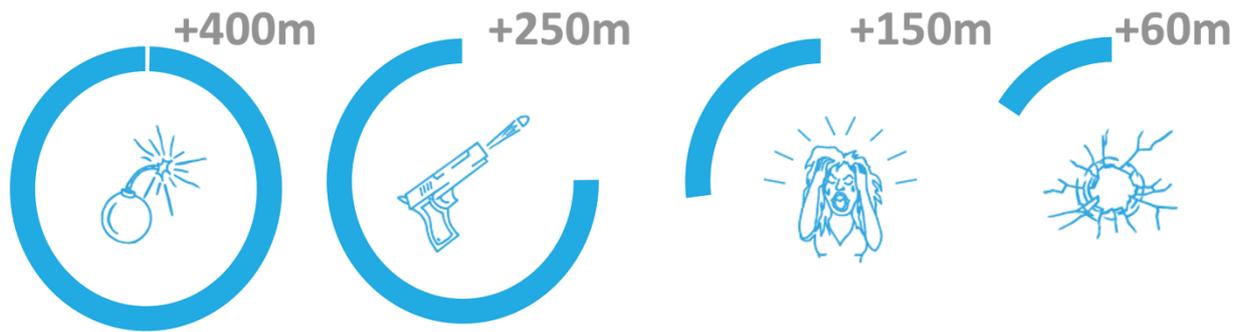
The possibilities are endless; augmenting video surveillance solutions with the SED elevates situational awareness. But to clarify, when it comes to "listening," audio analytics only detects and identifies certain acoustic patterns of sound, not actual speech. This is an important distinction because privacy is one of the things to be respected.

The following is a more detailed discussion of the benefits we had been mentioning:

- **Improved response time.** The average processing time of a human reaction when assessing a hazardous situation is about 7 minutes; with modern technology and AI, the processing time is 2 seconds. A reduction in response time can save more lives. Using new technologies such as SED, response times can also be improved in remote areas lacking security systems or those considered "red" areas.

- **False alarm minimization.** According to the U.S. Department of Justice, more than 90% of emergency alarms are unnecessary for one reason or another. These pose a serious threat to police department effectiveness and public safety. Another major danger is the repetition of those, leading to a lack of response from security and law enforcement personnel. Audio and intelligent communications facilitate real-time confirmation of the validity of a notice.

- **Operational efficiencies and business optimization**. Incorporating an audio solution into a security system can bring operational efficiencies by eliminating manual processes and answering the questions of "when, where, why, and how?" is simplified as an integrated system answers these questions. Personnel no longer have to search for these answers in different places. Audio offers a proactive rather than reactive solution. Audio provides more complete and intelligent information integrated with surveillance cameras and access control systems.

We believe that audio will be the backbone and is fundamental to monitoring and intelligence in security ecosystems. When you equip cameras with audio analytics, you now have smart ears to listen and discern the importance of what you might be missing.

Please contact **Doug Sear**, Director of Sales at Emergency Protection Limited, if you have an active interest in the Sound Event Detector by emailing **sales@emergencyprotection.co.uk.**