sound intelligence

Seeing is believing.
But hearing may save lives.

Incidents happen. People become aggravated and sometimes lose control. Sounds can be the first sign of an escalating hostile act and therefore can be used to alert security attention and to steer network video systems in various ways.
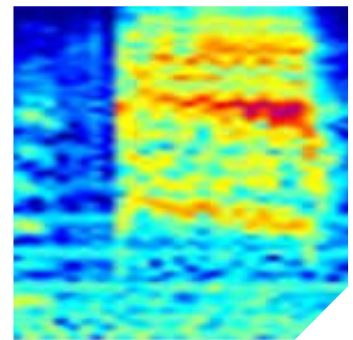
Sound detection – A new way to improve surveillance efficiency in real time

Sound detection is an advanced real-time audio analytic that filters out background noise to identify potential incidents such as verbal aggression, gun shots and breaking glass. If detected, it will trigger an alarm to security operators for efficient incident management.

Advanced Audio Analytics from Sound Intelligence is a solution that is embedded directly in Axis cameras through AXIS Camera Application Platform (ACAP) – making each camera an intelligent sound recognition device. No central server is required and video is streamed only when triggered by an audio event – reducing bandwidth consumption and system costs. More importantly, only sound characteristics are examined, not speech content, so the system is language independent and improves privacy protection because no continuous recording of audio or video is needed anymore.

Embedded sound detection solutions from Sound Intelligence and Axis improve realtime video surveillance effectiveness by:

> **Converting passive surveillance to active surveillance**
  - Help operators direct immediate attention to potential incidents
  - Remote verification of potential incidents
  - Fewer resources can efficiently manage more cameras

> **Saving lives and costs**
  - Early detection of verbal aggression before it escalates to physical aggression which mitigates post-trauma cost
  - Deterrent to potential perpetrators which will lower incident statistics and save costs
  - Perceived increase in personal safety for staff leads to higher quality of work life

> **Expediting remote assistance for vulnerable or exposed locations**

> **Real-time detection of verbal aggression before it escalates to physical aggression**

> **Edge based sound analytics – No central servers or continuous streaming needed**

> **Dynamic event integration with all major video management software platforms**

> **Privacy protection by only in-camera sound analysis**

> **Distinguishes potential incident sounds from background noise**

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Integrated sound detection in video surveillance is a significant benefit for:

Public Transport
Staff and passengers are exposed to potential vulnerable situations where disorderly behavior, aggression and intoxication can be involved. Early aggression detection can reduce the possibility of violent confrontation and alert operators when additional assistance is required for initial responders.

Prisons and Correctional Facilities
Due to the nature of correctional facility environments, prisoner conflicts as well as staff confrontations are inevitable. Often, inmates deliberately avoid the camera eye to avoid detection. Audio, as a complementary sensor in video surveillance, has broader area coverage and can detect early verbal aggression - saving inmate lives and ensuring staff safety.
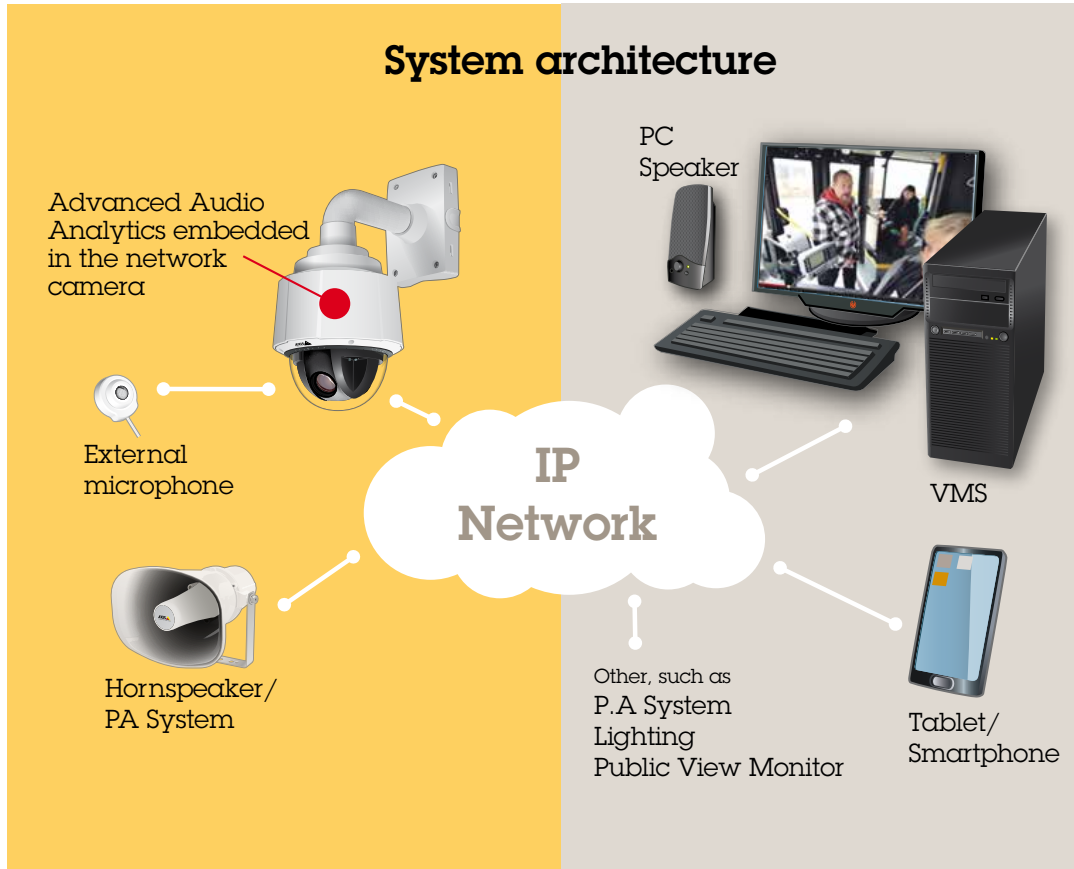
Small stores at night
Lone staff workers at night are exposed to potential intoxication, disorderly behavior, aggression and armed robbery situations. Integrated audio analytics can help increase staff security as well as act as a deterrent for potential perpetrators. And when the shop is closed at night, Advanced Audio Analytics in Axis cameras can detect the sound of breaking glass for early burglary intervention.

System architecture

- Advanced Audio Analytics embedded in the network camera
- External microphone
- Hornspeaker/ PA System
- IP Network
- PC Speaker
- VMS
- Other, such as P.A System Lighting Public View Monitor
- Tablet/ Smartphone

When embedded audio analytics detects sound patterns for characteristics of aggression, glass break or gun shots, the system will trigger the camera to stream real-time video footage to a control room or mobile device.

Summary
Axis network cameras, with embedded Advanced Audio Analytics from Sound Intelligence, enable early detection of verbal aggression, gun shots and breaking glass. Cameras can then send an alert and stream real-time video footage to operators and early responders – saving lives and diffusing dangerous situations before they escalate.

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