



# A TECHNOLOGICAL FOUNDATION FOR BUILDING SAFER COMMUNITIES



# A CORE MISSION OF THE EMERGENCY SERVICES IS TO IMPROVE THE SAFETY AND WELLBEING OF PEOPLE, PLACES AND COMMUNITIES. WHILE THAT MISSION HAS NOT CHANGED, COMMUNITIES HAVE BECOME INCREASINGLY DIVERSE AND COMPLEX, NECESSITATING PUBLIC SAFETY ORGANISATIONS TO CONTINUALLY ADAPT TO AN EVOLVING THREAT LANDSCAPE.

Urbanisation is also contributing to the growing pressure on public safety organisations, as high population density in urban environments is associated with an increased risk of crime and higher demand for policing services. Further, law enforcement and municipal leaders in many countries are challenged by reductions in

public spending and a faster, more complex, and more scrutinised policing environment.

The rise in urban populations has been paralleled by increasing investment in video security and surveillance systems in towns and cities. For governments, municipal leaders, and law enforcement agencies,

these security systems serve multiple purposes across the incident lifecycle:

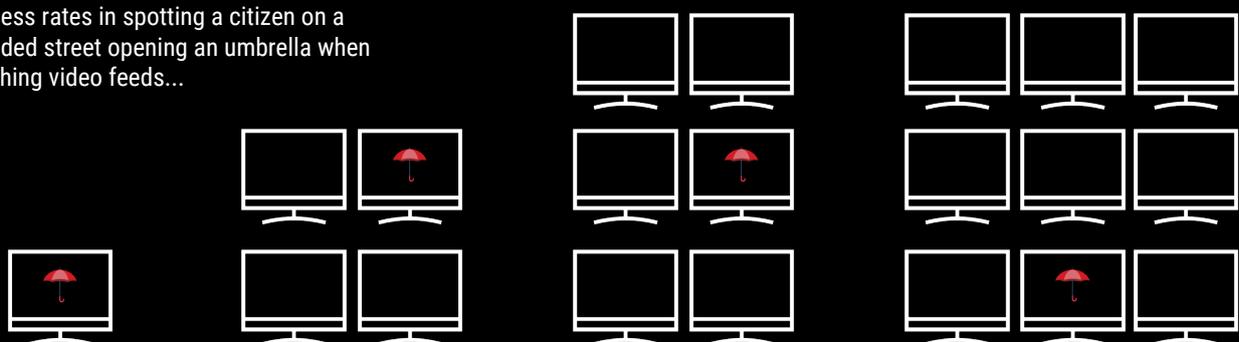
- Crime prevention
- Detection of offenders
- Situational awareness to aid crowd control or public order scenarios
- Source of evidence in the investigation of criminal offences.



## LIMITATIONS OF TRADITIONAL VIDEO SECURITY SYSTEMS

### LIMITS OF HUMAN ATTENTION

Success rates in spotting a citizen on a crowded street opening an umbrella when watching video feeds...



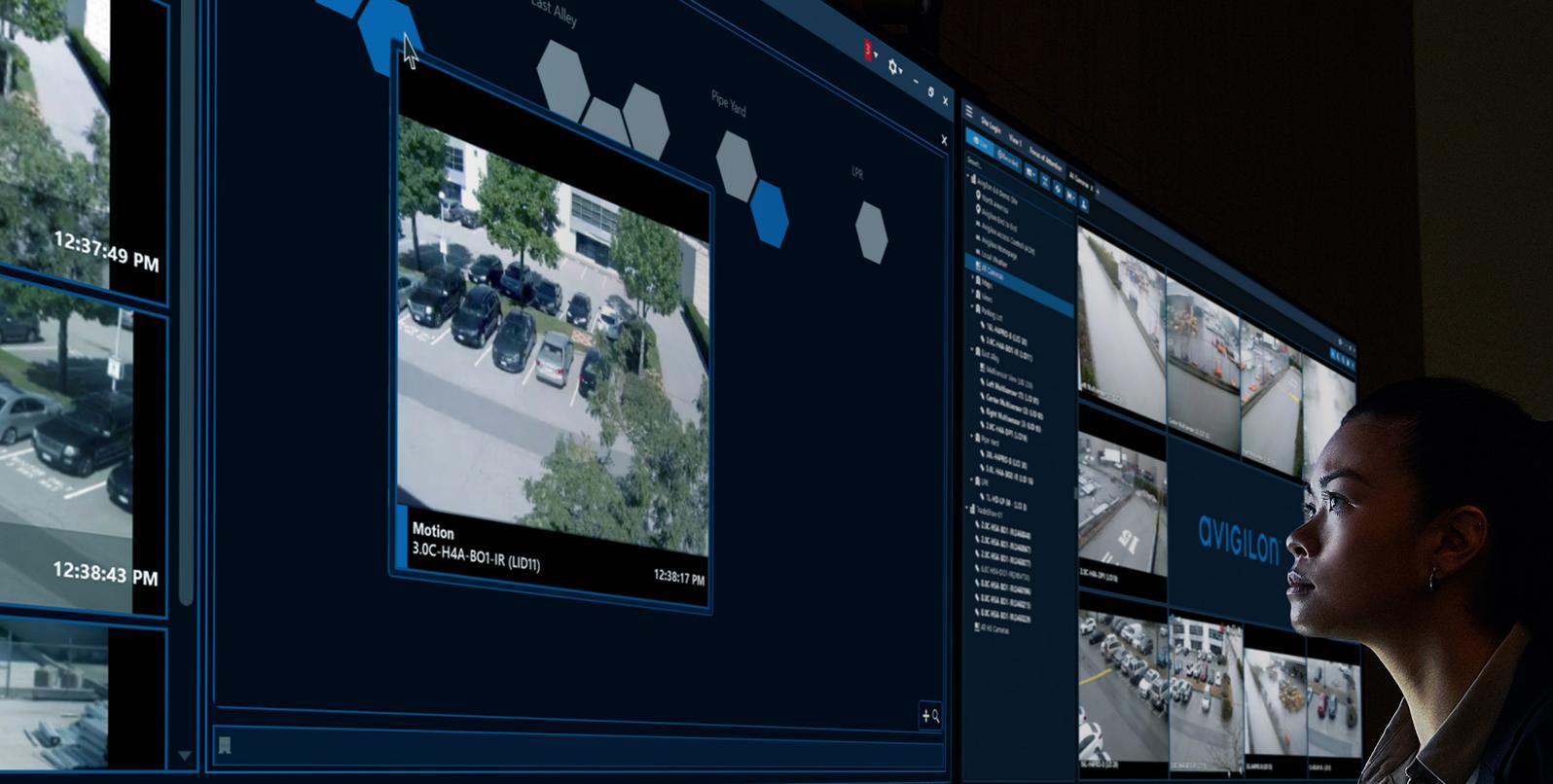
**85%**

**74%**

**58%**

**53%**

Source: Aldridge, J. (1994): CCTV Operational requirements manual Version 3.0. Public Action, No. 17/94, Sandridge (Hertfordshire), Home Office Police Scientific Development Branch.



## ACTIVE MONITORING OF MULTIPLE VIDEO FEEDS IS RESOURCE-INTENSIVE

Studies have shown that actively monitored video security systems have enabled a 15% reduction in crime<sup>1</sup>. This positive impact on crime, however, requires a greater commitment of resources compared with passive systems. Due to the limits of human attention, high operator-to-camera ratios are often necessary with traditional video security systems to implement active monitoring.

With the increasing adoption of detection analytics in video security systems, operators are able to do their jobs more effectively by automating certain tasks. While these detection systems help to alleviate operator workloads, there is a balance that needs to be struck when such systems are installed. Detection analytics must be configured to be sufficiently sensitive to detect a maximum number of potential threats. With the increasing sensitivity, however, comes the potential for a much higher rate of false alarms that need to be processed in addition to the increased number of alerts generated by an expanding CCTV programme.

## LIMITED CAPACITY FOR SEARCHING HISTORICAL VIDEO

Where the window of time in which a crime may have occurred is too great, investigators are unlikely to review CCTV footage, as the amount of video to be analysed can quickly exceed their manual review capacity. Given the copious amounts of video footage involved in post-event investigations, forensic video analysts run the risk of missing and overlooking critical details when relying on manual review methods.

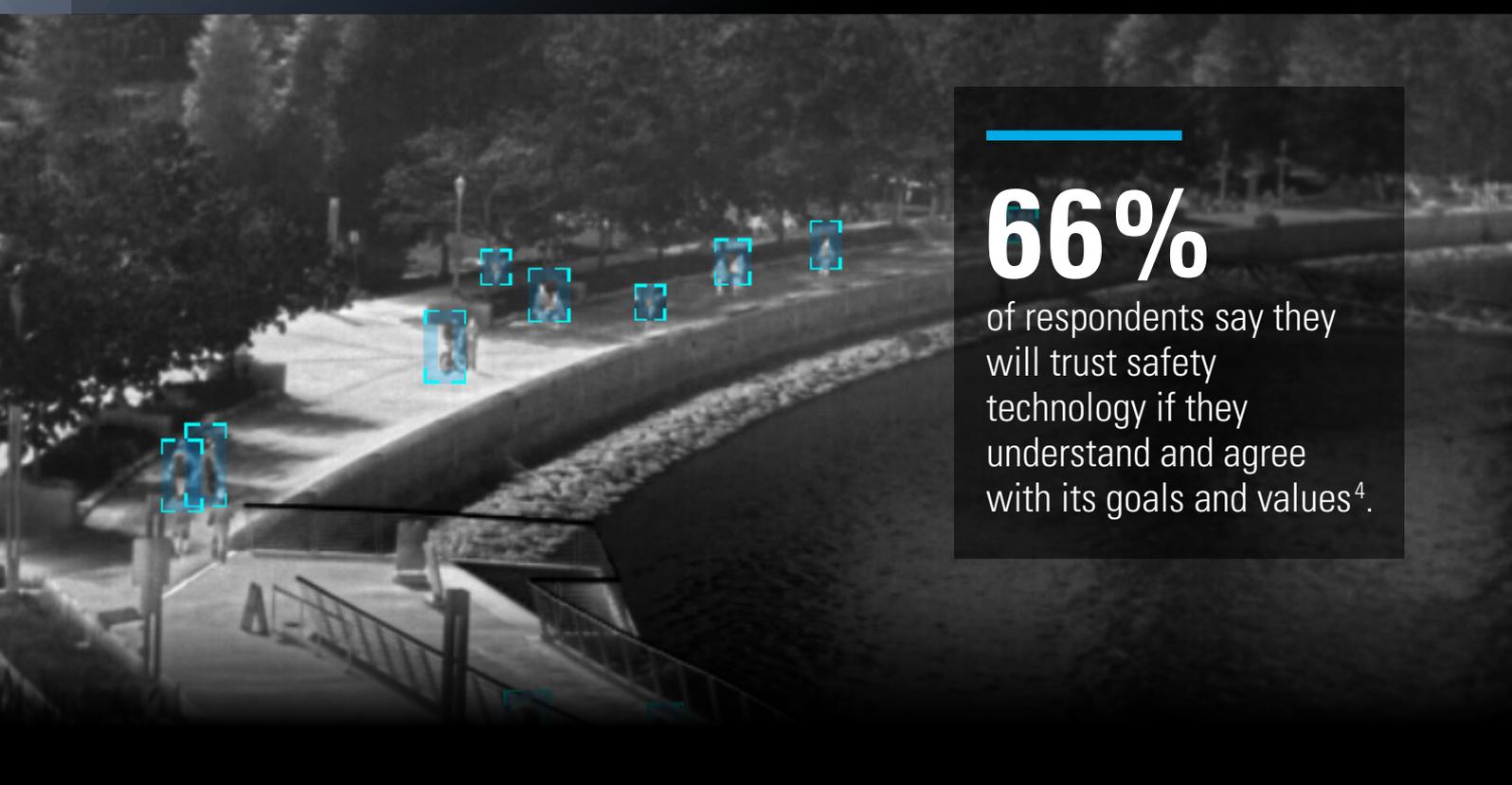
## HARNESSING ADVANCED VIDEO TECHNOLOGY WHILE MAINTAINING PUBLIC TRUST

The Ada Lovelace Institute, an independent research institute, recently noted that a lack of regulation of technologies such as video security systems, which capture, analyse and compare biometric data has led to public protest, legal challenge and calls for action<sup>2</sup>. In fact, reports of police forces using advanced video monitoring technologies without being transparent about their use has only served further to undermine public trust<sup>3</sup>.



**Given the need to build and maintain public trust, it is vital that deployments of video security technology address the following requirements:**

1. The deployment's objectives are technically possible
2. The deployment is legally permissible and is being used for legitimate and authorised purposes
3. The deployment is socially acceptable



# 66%

of respondents say they will trust safety technology if they understand and agree with its goals and values<sup>4</sup>.

## THE RESPONSIBLE APPLICATION OF AI-POWERED VIDEO SECURITY

**Artificial intelligence (AI) has the potential to address many of the resource challenges faced by public safety and law enforcement agencies. For example, AI can help with actively monitoring video cameras for unusual situations such as the appearance of smoke, a trespasser, or individuals matching the description of missing or abducted persons.**

Maintaining and building public trust, however, requires that the power of AI is harnessed responsibly. This means responsibly maximising AI's upside while safeguarding against mistakes and misuses. Forward-thinking organisations believe AI's best mission statement is to maximise human potential by being a powerful assistive tool that liberates human intelligence from mundane or overwhelming tasks.

Consequently, the overarching design principle for Motorola Solutions' AI-powered technology platform is "human-in-the-loop," meaning that AI-powered video security systems focus on assisting humans to make better decisions without replacing human intelligence.

# HOW AI-POWERED VIDEO SECURITY CAN HELP BUILD SAFER COMMUNITIES



## REAL-TIME IDENTIFICATION OF SUBJECTS OF INTEREST

At any point in time, a large city's police service can be actively pursuing several thousand individuals who are wanted for arrest or wanted on arrest warrants issued by the Courts. Here, the overarching objective is to reduce the number of offenders "at large" and maintain the lowest possible number of wanted offenders at any one time.

Existing methods for locating wanted individuals can be costly and resource-intensive. To alleviate resource pressure, a video security system with facial recognition capabilities can be deployed in line with the three key tests: objectives are technically possible, all relevant legislative provisions are complied with, and the deployment has the support of the local community.

When the video security system detects a face matching a watch list face image, an alert is generated and sent to the mobile devices of officers on the ground. In line with the principle of human-in-the-loop, an assigned Engagement Officer always has the final decision to engage with the person or not.



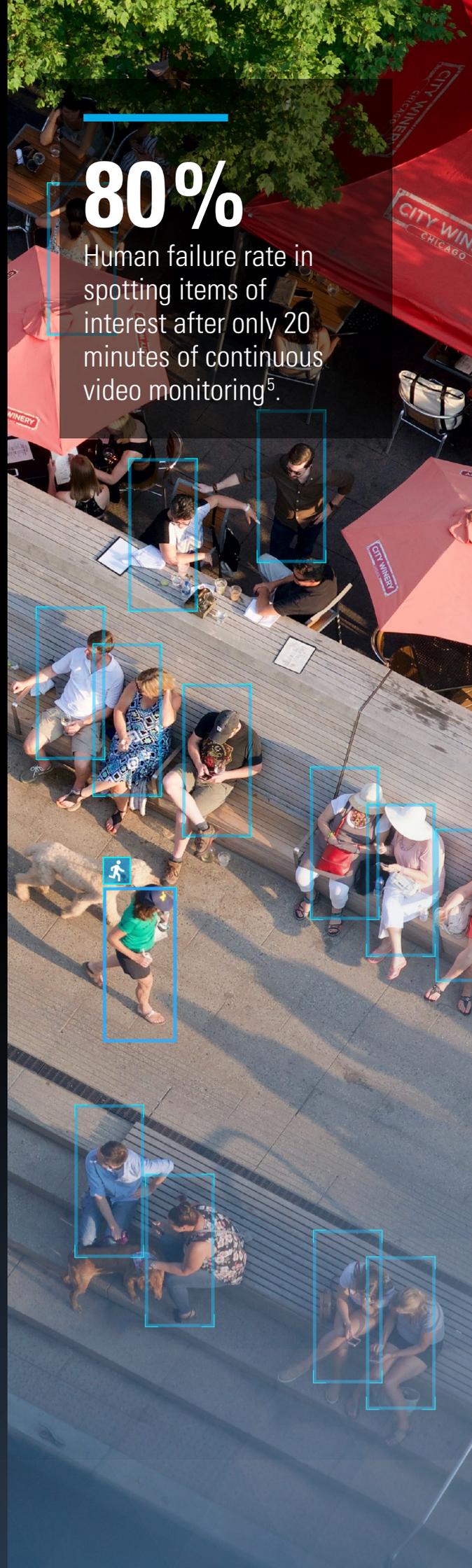
## ACCELERATING POST-EVENT INVESTIGATIONS

Modern video security systems can harness the power of AI to help pinpoint and track the location and movement of persons of interest in public spaces, using an individual's appearance or identifying characteristics, such as a coloured item of clothing, as search criteria. Analytics can help staff scrutinise hours of video footage from multiple cameras, helping to locate a specific person or vehicle of interest. AI can also continuously learn activity that's 'typical' in a scene, detecting and alerting staff to unusual motion.



# 80%

Human failure rate in spotting items of interest after only 20 minutes of continuous video monitoring<sup>5</sup>.





## ENHANCING SITUATIONAL AWARENESS

Combined with AI-enabled video analytics technology, Motorola Solutions video security cameras can provide a holistic view of unusual behaviours such as loitering individuals or anti-social behaviour. Multiple cameras monitoring the location of an incident and surrounding areas give security teams a holistic view of an evolving situation from multiple viewpoints. With all available intelligence aggregated onto a single screen, law enforcement organisations can identify quickly and unambiguously where action is required.



## SAFER COMMUNITIES: TRUST. TRANSPARENCY. CONFIDENCE.

Today, emergency services and the public they serve face significant challenges in creating safe communities. Yet, today's challenges can be tomorrow's opportunities. Safer Communities, powered by the Motorola Solutions technology ecosystem, is designed on the principle of building and maintaining trust through transparency. It builds community confidence by making emergency services more efficient and more effective. And it helps agencies shift from a reactive to proactive approach to public safety.

The emergency services have the mission and the expertise to prevent crime. Communities have the desire for safer streets and more transparency about how public safety organisations operate. When equipped and empowered with the right technology that aids connectivity, information sharing, and intelligence, both law enforcement and communities can better help each other build trust while achieving these goals. From better detection of offenders, to heightened situational awareness to keep public order, to more seamless evidence collection, AI-enhanced video security can help overcome today's law enforcement challenges, creating a strong technology foundation for safer communities.



For more information on Building a Safer Community,

**BOOK A CONSULTATION**

**SAFETY  
BUILT FROM  
TRUST**



**SAFER COMMUNITIES**

<sup>1</sup> Source: <https://www.college.police.uk/research/crime-reduction-toolkit/cctv>

<sup>2</sup> Source: Adalovelaceinstitute.org, 24 January 2020

<sup>3</sup> Source: <https://www.nzherald.co.nz/nz-police-trialled-facial-recognition-tech-without-clearance/M6SAWXF4VK4EEZWQHMXU2XTIUI/>

<sup>4</sup> Source: Consensus for Change, Motorola Solutions 2021 survey

<sup>5</sup> Source: NASA

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