

# Opportunities and challenges

With artificial intelligence now a hot topic for the sector, **James Atkinson** talks to industry experts about their expectations for the technology in the public safety space, while also reporting on its current use by UK policing

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**A**rtificial intelligence (AI) and machine learning (ML) seem to be permeating almost every aspect of society. Given the cost and time pressures on emergency services generally, it is no surprise then that AIs are being looked at to help relieve some of the burden. But as with any new technology, the emergency services are taking a cautious approach.

Robert Hogg, CEO of Black Marble, a UK software and AI developer, is all in favour of this caution. "For now, AI should only be thought of as a force multiplier; an AI tool that takes out the mundane parts of work tasks and automates them.

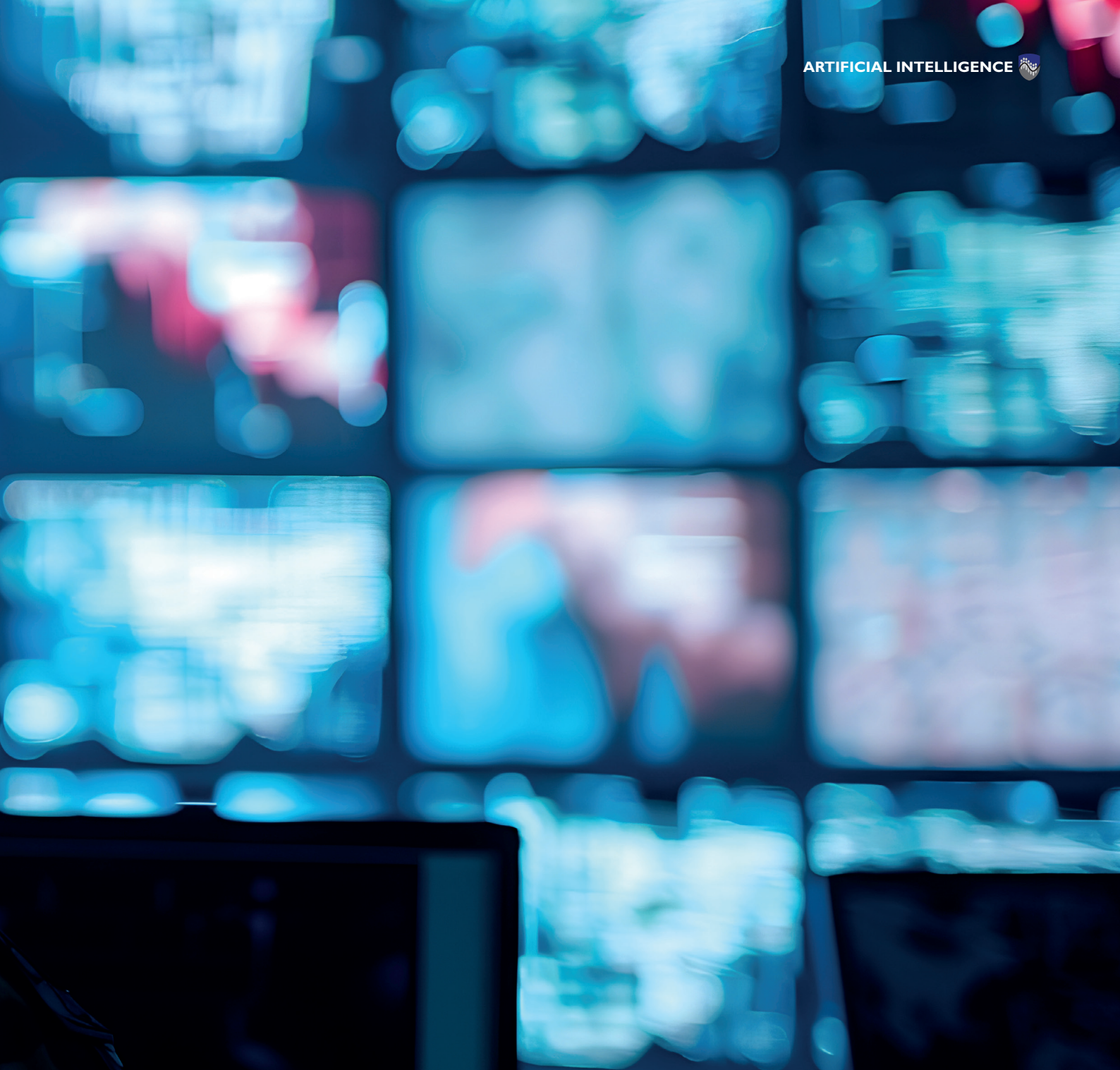
"It's about producing 20 per cent more in the day job by reducing admin, automating tasks and accelerating the speed of results. That's where AI will have a massive impact for the emergency services.

"Where AI won't have a massive impact is when people are looking for 'solve everything' AIs, because they are very complex and very expensive. One day they will work very well, but they need a

lot of effort to create in terms of quality of data, training, security and so on. They are not a quick solution."

He points to the recent EENA AI Special Project as a good example of the kind of deterministic, rather than probabilistic, types of AI he is referring to. "EENA has picked exactly the right kind of AI projects for now, which will have an impact, but not a negative one."

As reported in a previous edition of the **BAPCO Journal**, the EENA project brought together four AI technology companies – Gladia, Cestel, Augmented Hearing and LiveReader – and public-safety answering points (PSAPs) from seven European countries, undertaking nine



pilot programmes.

“The current generation of AIs for PSAPs are about improving quality and removing barriers in the emergency communications chain,” explains Peter Lonergan, policy officer at EENA. “The next step, which is about aiding decision-making and making suggestions, that’s a bit further down the line for PSAPs.”

“Our special AI project mainly looked at possible uses of AI in three areas,” he continues. “The first was language detection, translation and transcription. The second was noise isolation or cancellation to improve call quality. The third was triage to prioritise

***“The first possible use-case we looked at was language detection, translation and transcription”***

emergency calls effectively.”

The objective of the project was to explore the use of AI tools to see if they can be effectively implemented into PSAPs and how they can contribute to increased efficiency and, as a result, a better emergency service for citizens across Europe.

Lonergan says one general observation about the project is that there are certain emergency communications where the

audio quality is not the same as audio in general conversation: “Also, people are stressed, crying, anxious, maybe not speaking in their first language, so it is not typical conversation data that the AI might be used to working with, so that might also be a complication for AI working with PSAPs.”





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### Putting AI on trial

In September 2024, the National Police Chiefs' Council shared findings from various AI trial projects, which illustrate Hogg's point about how AI can save time, reduce errors and improve efficiency through the automation of processes. For example, West Midlands Police has introduced the Andi-Esra voice recognition and AI system to support answering 101 calls, such as reporting lost property, requesting an investigation update and prioritising calls with a vulnerability element through the identification of key words and phrases. The AI was able to deal with more than 30 per cent of all 101 calls, which freed up agents to prioritise those with more threat risk and harm.

Humberside Police deployed a control room AI assistant for calls relating to domestic abuse (DA) in order to help identify the risks to the caller and whether they have called police before. The software also transcribes the call and updates the incident record as fully as possible. The tool was found to save 29 per cent of the total call time (seven minutes and 50 seconds saved on each DA call).

To put this in context, the police recorded almost 1.5 million domestic-abuse-related incidents and crimes in England and Wales (excluding Devon & Cornwall Police) in the year ended March 2023. This could therefore potentially realise productivity savings of almost 190,000 hours per year. If applied to more crime types, there is the potential to increase time savings further.

Avon and Somerset Police is trialling an investigation tool originally developed in Australia called Söze. This uses technology such as computer vision, face search, speech-to-text and language translation to surface evidence, which it might not have been possible to find using manual methods.

Söze was able to review the evidential material in 27 complex cases in just 30 hours. It is estimated this would have taken up to 81 years for a human to review.

Bedfordshire Police, meanwhile, is using AI to connect to multiple

***“The AI was able to deal with more than 30 per cent of all 101 calls, which freed up agents to prioritise those with more threat risk”***

systems to enable the AI-supported creation of subject profiles, directed surveillance authorities and communication applications and mobile phone analytics.

This is driving productivity by saving significant amounts of time with high-level regional operations. The AI has the capability of summarising multiple intelligence reports and mobile phone data in seconds, which would normally take hours or entire shifts to do manually.

Beds Police has also developed an AI-based tool for automatic redaction of sensitive information from documents as part of the criminal justice disclosure process. It is estimated that it takes four hours to redact a simple domestic abuse case and up to 26 hours for a complex child abuse case.

In total, the annual average time taken to redact these case files per force, per annum, was approximately 133,400 hours. If scaled nationally, there are potential savings of up to 7.5 million ➔



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police hours from redaction. This, of course, now has to apply to audio and visual multimedia redaction as well.

AI and ML are essential for retrospective and live image analysis, including the controversial use of live facial recognition. It is also key to Robotic Process Automation (RPA). Avon and Somerset Police used an RPA function to process 2.1 million cases in 2023 and added around 80 FTE (full-time equivalent) of capacity to the force since deployment. Its RPA function now covers a total of 50 repetitive tasks.

### **Predicting the future**

AI tools that aid decision-making and provide predictive AI are the next level up from the deterministic AI tools currently being trialled or introduced into the emergency services. "As soon as you start to get onto predictive AI, there are different grades," says Hogg. "We need to look at how we can build frameworks to deliver AI into critical services that are explainable, auditable and can prove their value. Proof of value is absolutely key."

The concept of predictive policing or ambulance deployment based on analysis of historical crime data, geography, social strata, weather, social media and emergency calls, CCTV, mobile video footage and so on is not new. What is relatively new is the sheer power of AI computing today and its ability to gather all that disparate data, crunch it so much faster and then extract insights in near-real or real time.

"AI could help you determine new incidents happening or predict events sooner than is possible now," says Hogg. "That is probably the

***"An AI tool's effectiveness comes down to the quality of the data which it learns from"***

'bright star' AI tool for all the emergency services.

"It's about using AI to enhance situational readiness by putting resources closer to where they might be needed, because there is a growing confidence that something is going to happen."

Of course, an AI tool's effectiveness comes down to the quality of the data it learns from. Data can be biased based on gender, ethnicity, religion and social standing.

Crime hotspots tend to be in inner urban areas often populated by low-income and minority ethnic groups, and that kind of data can skew the AI's learning model. "Police do have a massive problem training AIs for that reason," observes Hogg.

Bart van Leeuwen, situational awareness expert at Netage, is also an active firefighter in the Amsterdam Fire Service with 30 years of experience. He has studied how humans make decisions, especially in very stressful situations. "My tagline is: if we think we can improve human decision-making with AI, shouldn't we understand human decision-making first?" he says.

"What I try to explain to people is that this is a lot harder than we think. We are far less





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## ***“For van Leeuwen, the big stumbling block to devising a well-structured AI is terminology”***

rational as humans than we dare to acknowledge.” He cites a study in The Netherlands where the fire service tried to understand how decisions are made by getting 120 fire incident commanders to run an incident in a VR scenario.

One-third of the commanders ran the incident singly, as they normally would, relying on their training and experience. The second group ran the incident in tandem with a similarly ranking incident commander from outside; they ran the incident jointly. The third group also had a second commander involved, but they would step in, discuss an issue, and then step away again.

“What blew my mind is that the person running the incident alone was more effective and more situationally aware than the two-person commands,” says van Leeuwen. “What was also effective was the third option where somebody was not interfering with the incident but just stepping in and making points.”

This is similar to what van Leeuwen refers to as ‘adjunct AI’. “The AI is not telling you what to do. It is just giving you thought-provoking information. That is where I see the role of AI.

“Something that monitors the process and asks questions, but where an incident commander can say: ‘I understand why you say that, but you haven’t seen this and that, so I am not changing my position.’”

But if these more advanced, more complex advisory-type AI tools are to be effective, they need to be better structured and helpful, van Leeuwen believes. “The road to AI goes through IA (information architecture). What should the data nerds know about the fire service that will enable them to provide a better structured and helpful AI tool?” he asks.

For van Leeuwen, the big stumbling block to devising a well-structured AI is terminology. “We don’t have taxonomies, we have folksonomies. Enabling people to really understand exactly what you mean by certain terms is really difficult.

“How can you train an AI with data if even within the fire service, people disagree about what a certain term means?”

Another major issue van Leeuwen points to is that firefighters and police are facing more ‘outlier’ or one-off-type incidents, where situations escalate because the incident was not what the firefighters or police expected. The Grenfell Tower fire in the UK is a good example of this.

“These AI systems try to be really accurate. But if you look at outliers, that is actually impossible. I’d rather have a system that says ‘This is not what you think it might be’, instead of telling you exactly what it thinks it is.”

It is about providing an operational perspective; using the AI for outlier detection, not an attempt at accurate description.

To this end, van Leeuwen created an AI for the Amsterdam Fire Department that looks at the data to see if it could signal that a dwelling is above a certain threshold.

The reason for this is that a fire in a 70 square metre apartment can behave very differently from one in a 250 square metre apartment. If the incident commander at least knows it is the latter, they can consider changing their default approach.

He is also a keen advocate for asking uncomfortable questions about AI tools. As he points out, the tech bro enthusiasts who create these AIs have no skin in the game. They are not confronted with the results of poor outcomes.

"We seem to think only of the potential maximum positive outcome, but neglect the maximum negative outcome. That means asking the question: what if it goes horribly wrong?" he says.

It is essential, therefore, that if AIs are deployed in the emergency services that they conform to strict ethical and legal standards to remove bias, preserve privacy, are tailored to the specific use-case, are transparent and explainable and keep a human in the loop making the final determination.

EENA's Lonergan says it is very important that the emergency

services comply with the EU AI Act. "This is particularly the case with PSAPs, as call-takers work with people in vulnerable situations, and wrong decisions can have very considerable consequences," he says.

"It is very important that PSAPs trial technology: consider it deeply; make sure it is being used ethically; that the data is being protected; but make sure it works, that it suits them."

Hogg is a big advocate of AI, but he sounds a note of caution.

"Artificial Intelligence is going to genuinely change how society works and how the emergency services work, but we have got to take control of it really tightly.

"It is better to go just a little bit slower to get guaranteed quality results and keep building on that quality, and then ultimately you will get everything."

He adds: "The failure will come from people rushing AI." 

