The technology empowering security and police services with mission-critical data and enhanced collaboration

By Jackson White, Business Development Director of Tactical Data Links and VP Marketing, SPX Communication Technologies

While police, fire and rescue, and ambulance services work highly effectively side by side, the UK Government has previously called attention to the need for improved collaboration between teams to increase their effectiveness. A 2015 government consultation served to reinforce the duty of all three emergency services to collaborate with one another to share good practice, drive better outcomes for the public, and deliver the world-class services that our communities deserve.

This has led today's emergency teams to look for new ways to use their technological capabilities collaboratively to stay one step ahead. Their capacity to share information – within a team, over different platforms and across services – strengthens decision-making and improves the overall speed of operations against threats to Critical National Infrastructure (CNI), public spaces, and communities across the UK and beyond.

This need to improve collaboration and interoperability has highlighted current limitations in some existing systems in terms, particularly of the availability, range throughput, and even cost of data collection, use and sharing. This is where innovations in Data Link technology are unlocking real value for emergency teams.

Video Data Link innovation

Video data Links provide real-time intelligence-gathering across land, sea, air for advanced intelligence, surveillance and reconnaissance (ISR) and enhanced incident response. Technological advancements mean they are now lightweight and low-power enough to be installed on both manned and unmanned air platforms and capable of re-streaming – or transcoding – to multiple destination points such as a command centre or at the tactical edge using mobile devices.

Limited RF bandwidths are available to security and policing organisations, so transmitting high-quality video and audio data is often challenging. Advancements have therefore focused on significantly reducing the bandwidth requirements for effectively and in real-time transferring the same – or better – quality. Access to shareable IP allows greater flexibility for sharing critical data through encrypted file shares. It also grants greater use of applications such as electro-optical/infrared sensors, and tracking and location data being shown on a moving map – all improving incident response.

Video quality has significantly improved, with some Video data Links offering 4K Ultra High Definition video image quality and a maximum system resolution of 1080p60. This clarity makes identifying specific details and potential threats much easier. Furthermore, teams can select the latest mission-critical information required without disrupting their operation and simultaneously process multiple video inputs. In some cases, Video data Links solutions can offer six separate video inputs – for example, four HD and two SD – capable of encoding four videos simultaneously.

Creating a secure network

As threats continue to evolve, Data Link technology has kept pace in providing teams with the ability to network-enable platforms across land, sea and air, allowing for coordinated ISR missions.

Network-enabling a platform, such as a fixed or rotary-wing aircraft, means it then becomes an extension of a team's secure IP network capability – including the same suite of services expected of a desktop setup. Data can be transmitted using sophisticated encryption software, resulting in any data captured on the aircraft or an Unmanned Aerial System (UAS) being securely and reliably transmitted down to the ground and onto a secure network. Platforms like UASs have become an extension of a team's operations, providing full awareness in the air and on the ground across the entire operational domain.

West Midlands Fire and Ambulance: Collaboration through Data Links

These enhancements in Data Link technology are valuable to each of the emergency services. But when they come together around the technology, the results can be extremely powerful.

One example is West Midlands Fire and Ambulance Service and the National Police Air Service (NPAS). They have been using Data Link solutions from ECS, part of the SPX Communication Technologies platform, since February 2022. ECS leverages Radio Frequency (RF) signals to deliver reliable and proven Data Link solutions around the world.

The West Midlands Fire Service and West Midlands Ambulance Service have relied on the ECS portable Handyview monitoring terminal and the Evenlode Airborne Data Link (ADL) to enhance their situational awareness, improve collaborative working across services and assist in incident resolution.

Both emergency services integrated the portable Handyview terminal onto command vehicles and control centres to gain instant access to encrypted audio and video footage of live incidents. As a result, transmissions have since come via video link equipment fitted on the NPAS' fleet of helicopters and aeroplanes. This has meant

NPAS has been able to authorise which teams can access its video and audio transmissions of an ongoing incident, and when.

By combining Handyview and the Evenlode ADL, ECS has ensured a high level of security that complements both services' drone capabilities with crews able to access real-time intelligence even when their drones can't fly, for example, during poor weather conditions. Since the integration of these solutions by both West Midlands services, these have undoubtedly helped save lives and keep the community safe.

Gaining real-time access to this intelligence improves decision-making and ensures a faster more collaborative response to critical incidents such as large-scale and industrial fires, flooding, road traffic collisions, monitoring crowds at large events, and aiding the search for missing people. Now with more collaborative and joint operations, not only is it essential to have interoperable voice communications, but the ability to share situational awareness information is key in being able to resolve incidents efficiently and safely.

Furthermore, with the Handyview video output encrypted and connected via a laptop, emergency teams can stream live video to incident commanders and fire and ambulance control rooms. This has undoubtedly improved situational awareness, allowing commanders to make better-informed decisions.

The latest in Data Links

In late 2023, ECS introduced its new Evenlode Video and Audio Encoder / Decoder to deliver improved low-latency, long-range, high-definition video and audio transfer for faster and more accurate intelligence-gathering.

It supplies high-efficiency video coding, and low-latency encoding to deliver superior multi-video compression for efficient video recording and real-time, secure distribution. Latency below 120 milliseconds end-to-end means images are transferred and received in real-time, enabling greater situational awareness, and more accurate, faster response.

What's next

In the coming years, by integrating Artificial Intelligence (AI) and recognition software, it's fair to expect emergency services teams in the UK and abroad will not only be able to improve their decision-making but also analyse the captured data for post and pre-operational intelligence, which is crucial in strengthening security and policing efforts.

SPX Communication Technologies will be exhibiting at Security & Policing 2024, stand D61, 12-14 March, Farnborough International Exhibition and Conference Centre.