PREVENTING COMMUNICATIONS BREAKDOWN

Over the years we have seen just how vital a tactical communications capability is when it comes to handling large-scale incidents, whether they are terrorist related or as a result of a natural disaster. Experience has shown that operational issues can and, unfortunately, do arise if emergency services and other bodies, are overly reliant on systems that are incompatible, prone to breakdown, or are just not supported in certain environments (eg underground stations). The last thing anyone wants – should the worst happen – is an incoherent approach to communications, which may result in a lack of co-ordination among the parties involved; key personnel not being deployed to best effect when they are already likely to be stretched to the limit by a major event, and unnecessary delays with messages being passed on indirectly or, in some cases, not at all.

Although not necessarily security related, the communications failures associated with the tragic King's Cross Station fire in London way back in 1987 are well documented and illustrative of the issues that should be avoided. These led to a number of recommendations in the subsequent report by Sir Desmond Fennell. Fast forward two decades to the devastating 7/7 terrorist attacks and some of the problems identified in the aftermath of King's Cross had, according to media reports, still not been resolved in line with Fennell's recommendations, specifically the fact that the radio system used by London Underground staff wasn't fully interoperable with those of the emergency services. The 7/7 inquest also heard that other radio difficulties meant that rescuers – who were attempting to save lives on the underground trains where bombs had been set off – were unable to pass information and requests for more help to the surface.

Speaking to the 2011 inquest, Geoff Dunmore, London Underground's operational security manager, didn't disguise the fact that there had been difficulties experienced during 7/7, telling the inquest: "The root cause of a lot of the problems was the fact that we couldn't get communication directly from the trains to the outside world, including our own controls". He was, however, keen to highlight to the inquest that things had changed for the better, post 7/7, thanks to a new radio system named Connect: "It is a lot more resilient than anything we had previously," he said.

When the subject of compatibility with the emergency services' Airwave system was raised Dunmore said that this could be achieved technically but, significantly, he wasn't convinced (this was in early 2011) of the utility of doing so: "If you needed someone from the emergency services to talk to a member of our staff down a tunnel we could simply give them a Connect radio at the station for them to do that".

Alongside ensuring that solutions aren't going to fall down when they are needed most, new approaches to communications are also coming to the fore, alongside proven solutions like Tetra (Terrestrial Trunked Radio) networks – a form of PMR (Private Mobile Radio), to tie in with the emergency services' thirst for data. The UK's move to a solution based on 4G public safety LTE (Long-Term Evolution) technology being a case in point. This reflects the fact that it is no longer just about traditional voice services, there is now a drive to bring both voice and broadband data services into the mix to enable the sending and receiving of video and images associated with events that are unfolding. In some cases hybrid networks that combine private (otherwise known as professional) mobile radio with commercial and dedicated broadband services may be the preferred route. According to Airbus Defence and Space – a key provider here – this opens up the potential to have broadband services in a secure way as a supplement to mission-critical Tetra or Tetrapol voice and data services.

Of course, the big news in the UK today – where the provision of mission-critical communications is concerned – relates to the Home Office-led Emergency Services Network (ESN), which is being developed through the Emergency Services Mobile Communications Programme (ESMCP). This is basically the next-generation communications system for the three emergency services – police, fire and rescue and ambulance – and is being designed with a strong emphasis on resilience, security, and public safety functionality.

According to the Home Office the new services – which are expected to save the UK taxpayer £1 billion over 15 years – are scheduled to replace the existing system from mid-2017. The current service – Airwave – operates in the form of a PMR (Private Mobile Radio) system whereas with an eye on future demands it is envisaged that a commercial network will be used instead to integrate critical voice and broadband data services. As part of this process key contracts have already been signed with Kellogg, Brown and Root as

the 'delivery partner' for ESMCP as well as Motorola Solutions which will look after the 'delivery of user services' and EE which is tasked with the 'mobile services' provision.

As the operational date of ESN draws ever closer, the Metropolitan Police Service (MPS) – the largest force in the UK – has just announced the awarding of a contract to Frequentis to ensure that the MPS control rooms across London can manage ESN calls from the very start of the national transition.

While some countries and cities are looking to new approaches on the communications front, there still appears to be plenty of life left in systems that work to standards like Tetra (Terrestrial Trunked Radio), first introduced way back in 1995. A case in point is Hungary where the Government continues to invest in Tetra technology. Last month (January) Airbus Defence and Space and its partner Pro-M signed a major maintenance contract for the country's Tetra network – called the Unified Digital Radio System (UDRS – EDR in Hungarian). The network was first deployed in 2006 and covers approximately 99 percent of the country. According to Airbus Defence and Space it is used by around 44,000 users from public safety agencies.

Tetra was also to the fore at the G7 summit held at Schloss Elmau, Germany in June last year where the security forces at the event were equipped with a customized secure Tetra radio system. Over 30,000 police officers, firefighters and security staff were mobilised for the summit. Prior to the summit 'stress tests' were conducted to demonstrate whether the Tetra radio network could deal with the high levels of traffic and function normally during such a demanding event.

Beyond this, a Tetra-based solution played a critical role helping the emergency services in Dubai deal with the massive blaze which broke out at the 63-storey 'The Address Downtown Hotel' on New Year's Eve.

Returning to the subject of where communications technologies are headed over the next few years, in recognition of the growing footprint of smart devices, Airbus Defence and Space presented a new Tactilon Suite app for hybrid networks at the PMRExpo in Cologne during November. This, it is reported, provides users of standard smartphones – and other smart devices – with 'push to talk' and other Tetra services. A potential use of the app, cited by Airbus, could see a high-ranking officer choosing to just carry a smart device but still able to participate and follow any communications related to a particular operation. "Many of our public safety customers are looking for a flexible way to enhance mission-critical communications with mobile broadband solutions that provide them with a seamless and secure integration with existing narrowband networks," said Eric Davalo, head of strategy solutions portfolio and engineering with Secure Land Communications at Airbus Defence and Space.

Asking Jeff Spaeth, corporate vice president – systems and software enablement – Motorola Solutions, for his take on the standout communications trends, he replies: "These are certainly interesting times to be in the business of mission-critical communications because it is definitely a time of change. Land Mobile Radio or PMR

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Apps allow users of standard smartphones to use 'push to talk' and other Tetra services
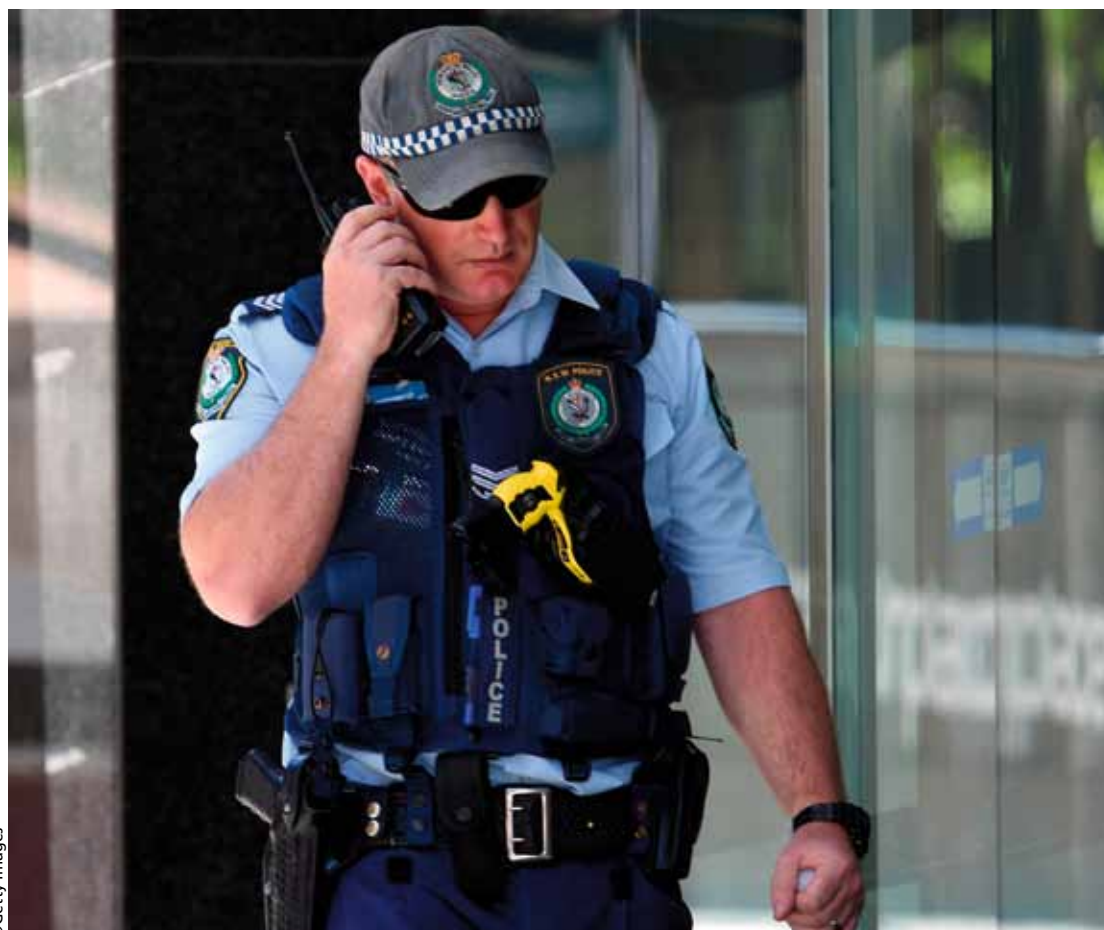
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Land Mobile Radio is the technology of choice used by virtually every emergency service around the world

(Private Mobile Radio as it is called in parts of Europe) continues to be the technology of choice in use today by virtually every emergency service around the world. There are different flavours of that [LMR/PMR] and one of the big developments over the last 10 years has been the emergence of standards". According to Spaeth, in Europe Tetra is the pre-eminent standard whereas in other parts of the world [US and Canada] the P25 standard is increasingly being adopted.

For Spaeth the desire to have systems which work to a recognised standard has been driven, to a large degree, by the need for interoperability: "There is the ability for multiple agencies all utilising the same standard to 'interoperate' in an emergency. You can achieve that in many ways but this [working to a standard] has certainly been one of the factors behind it. In many cases governments have put forward initiatives and implemented a nationwide network or mandated certain standards for emergency communications".

Added to this, Spaeth feels that another catalyst for action on the effectiveness of first responder communications has been a succession of major incidents, including, crucially, those that were terrorist related: "First responders need to have the best

communications available to manage these situations and that has certainly raised its profile over the past 10 to 15 years".

Moving forward Spaeth signals the emergence of new approaches with data in mind: "Whereas virtually every responder is going to be using PMR for many years to come, we are also going to see the usage of other technologies to augment that". Spaeth explains that in the past communication was pretty much voice centric: "As a first responder you would push a button to talk instantly to a group of people but now we are going from 'push to talk' to 'push to talk' plus data, plus video. Today the data part is done many times on the PMR network but when you move to things like broadband and LTE people get significantly more bandwidth and data," he notes.

So to conclude, when it comes to tactical communications for the emergency services, especially when they are confronted by large-scale incidents, it is vital that the systems they deploy work to recognised standards, are interoperable with other first responders at the scene, and, increasingly - with an eye on the future - have the ability to transmit and receive data and video through solutions like hybrid networks.

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