Reach

Issue 7 • 2014 • The official magazine for users of the Airwave Service

Working together

The benefits of interoperability

Dyfed-Powys Police

Transforming rural policing

New alert service means faster response for Ambulance Trust volunteers

AIRWAVE

From the Editor

As the new editor of Reach, I'd like to welcome you to the second issue of Reach for 2014. I have worked for Airwave for more than three years and am continually inspired by the stories from you – our readers. Reach will continue to share new and best practices examples with insight from across the public safety community.

The Metropolitan Police Service (MPS) (pages 1-3) has recently concluded a trial of the Airwave Max training programme – Reach explores the challenges and the successes that have resulted in Airwave Max being approved for MPS-wide rollout in all 32 boroughs and specialist units by December 2014.

Also in this issue we learn from our colleagues in Hampshire (pages 12-14) who have truly embraced interoperability and regularly carry out exercises to plan and practise their operations. These complex exercises are designed to test their resources, relationships with their colleagues and overall competencies.

We give a more in-depth look at the Glasgow 2014 Commonwealth Games (pages 18-19) and the preparations undertaken by Police Scotland. Planning commenced in 2012 and we delve into the levels of coverage and capacity needed to support this summer's events.

Rural policing continues to evolve – Dyfed-Powys Police (pages 24-25) show how they are leading the way in terms of creating greater efficiences in their methods of policing. Chief Constable Simon Prince explains the benefits of giving officers access to systems and information whilst out on patrol.

News too from two of Airwave's chosen charities (page 23). The Warwickshire and Northamptonshire Air Ambulance (WNAA) are again taking part in this year's Ride In motorbike cavalcade in August; and the Fire Fighters Charity takes the opportunity to introduce their new Chief Executive Officer, Dr Jill Tolfrey.

A jam-packed issue and, we hope, an enjoyable read. Please feel free to share your stories and comments by emailing the reach@airwavesolutions.co.uk.

Helen Bleasdale, Editor

A limited number of printed copies of Reach are available – please let us know if you would like extra copies.

MEET THE TEAM

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Inside ...

Front cover pic: Chas McGill, Watch Manager (Officer in Charge) at Hardley Fire Station, Hampshire Fire and Rescue Service, Eastleigh and New Forest, has been honoured with the Chief Officer's Special Recognition Award Safer for his work on embedding the Airwave Service with the Hampshire service and promoting it to the police and other agencies. Chas, left, is pictured with Mike Batten, Hampshire Constabulary Hazmat Advisor. See pages 12-14 for the full story.

Training programme brings better radio discipline to Metropolitan Police Service

The Metropolitan Police Service (MPS) has been an Airwave customer since 2007. The MPS employs 31,000 officers together with 13,000 police staff and 2,600 Police Community Support Officers (PCSOs). The MPS is also supported by more than 5,100 volunteer police officers in the Metropolitan Special Constabulary (MSC) and its Employer Supported Policing (ESP) programme. The MPS covers an area of 620 square miles and a population of 7.2 million.

The MPS has recently concluded a trial of the Airwave Max training programme. We spoke to Superintendent Sean Vickers, Strategic Delivery and Change and Inspector Vic Conran, Airwave Max Project Manager at the MPS, at the MPS Command and Control in

Inspector Vic Conran

Airwave Max is a programme designed by the Home Office to ensure our customers benefit from using the Airwave Service in the most effective way. Supported by Airwave's End User Engagement (EUE) team, Airwave Max aims to give users all the information, advice and best practice they need to maximise the full potential of the Airwave Service.

> **The face to face briefings conducted by the EUE team have contributed to the overall success of the implementation of Airwave Max. The successes can also be attributed to implementing a system which uses the existing technology in a more efficient manner, releasing talk group air time for operational use.**
>
> **Inspector Vic Conran, Airwave Max Project Manager at the Metropolitan Police Service**

Lambeth, south London, to find out how successful Airwave Max has been for them.

"The implementation of Airwave Max came about for various reasons," said Vic. "One of these was that the Department of Information noticed that some police officers on the street were unaware of some of the capabilities of their Airwave terminals. Airwave Max is designed to increase the knowledge of the officers, increase the call backs and reduce the occupancy on the support channels and also to improve our radio transmission (RT) procedure which would also have an impact of reducing occupancy levels on the talk groups.

"When we rolled out Airwave Max, it was done so under budgetary constraints, so Airwave's End User Engagement (EUE) team has helped to bolster our briefing team in getting the knowledge out there. The Airwave Max trial has been embedded in three boroughs, Newham, Westminster and Southwark. This in itself was a challenge due to the need to brief both Command and Control staff along with all the respective borough operational teams who rely on their radios to do their job, all of whom work 24-hour shift patterns."

"It is difficult to target them all, so we worked with Airwave pre-trial to prepare a timetable (implementation plan) of how we would set out to meet as many of the officers as possible over a three-week period."

"As the tactical lead for Airwave Max, I asked Airwave's EUE team to attend the trial boroughs and meet with operational police officers with a view to reinforcing and reminding officers about the functionality of their Airwave handsets. Our programme focuses primarily on the use of the emergency button, Airwave Gateway and point-to-point (PTP) calls. The EUE team then worked to cascade the Airwave Max briefings to more operational officers than would otherwise have been possible.

"In some cases, officers were unaware of Gateway, but were frustrated when they lost their radio signal, for example in underground car parks or large buildings where Airwave coverage has not been specified. With Airwave's EUE team, we have been briefing officers on how the system works and the benefits of pressing the Gateway button.

"We had also previously identified a few challenges. One of these is the inactivated timer, which becomes a problem when an officer calls into the control room for some information and the operator remains silent when researching for example, the Police National Computer (PNC). After ten seconds of silence, the call cuts out all together and the officer needs to PTP the control room again. It is a national timer, which has been previously set and agreed with all the emergency services. We had hoped to extend the time limit as we know it is a practical problem for operators when they are doing research. For various reasons we haven't been successful, but it was important to get that message out to our users, and Airwave's EUE team played a big role in communicating that. Instead, we came up with some advice for the control room operators: keep pushing the foot pedal, or the operator can simply tell the officer that he needs to do some research and will PTP him when he has the information available.

"Airwave's EUE team also demonstrated some shortcuts in using the terminals, which some of the officers had never been taught. One example was the change in the programming of the radios to remove the backlight. It is really a one-button press to put the light back on, but if you don't know it can be frustrating and officers were reporting that their radios were faulty. Now through implementing Airwave Max we have seen a marked decrease in operational officers making complaints."

The MPS has been working with Airwave's EUE team since December last year.

"The face to face briefings conducted by the EUE team have contributed to the overall success of the implementation of Airwave Max," said Vic. "The successes can also be attributed to implementing a system which uses the existing technology in a more efficient manner, releasing talk group air time for operational use.

"Reviews and feedback have identified that officers now have a greater knowledge of Gateway and the emergency button. They are using PTP more, diverting unnecessary radio activity away from the main talk group. Officers can more easily make important

Airwave worked with the MPS to produce a compact, user-friendly guide for police officers to use as a quick reference on radio features – see extract below:

Superintendent Sean Vickers

We can already see a definite improvement in radio discipline, and we can see the benefits. In May this year we had no priority one communication issues - the first time ever that we've been in that situation.

Superintendent Sean Vickers, Strategic Delivery and Change at the Metropolitan Police Service

operational transmissions even on busy talk groups. Officers are dealt with on support channels more efficiently on the Airwave Max boroughs than on conventional channels. This reduces the waiting time for officers, and therefore for members of the public with whom the officers are engaged."

Superintendent Sean Vickers first became involved in setting up Airwave Max just prior to London 2012. "The officers have been very engaged with Airwave's EUE team since then. They are more candid with external colleagues, and this has given us another level of feedback which has been very useful."

"We can already see a definite improvement in radio discipline, and we can see the benefits. In May this year we had no priority one communication issues - that is the first time ever that we've been in this situation.

"The initial input will be to convert everyone over to the new way of working, which covers the vast majority of the users. The rest is left to computer-based training, updates and briefings. The information is also passed down from peers and colleagues as they are coached when they come on as new officers out of training school."

Airwave Max has now been approved for MPS-wide rollout in all 32 boroughs and specialist units, which is to be completed by December 2014.

Airwave abroad – I

By Kai Fryder, Head of DACH Region, Airwave Deutschland GmbH

The advantages of using TETRA for today's mission critical communications are not only recognised in Great Britain, but across the globe countries still acknowledge the technical benefits of using it for their public safety networks. In Germany, the programme to build the world´s largest TETRA network is entering the home stretch, and for the past four years Airwave has played a key role.

The new German TETRA network will have up to 4,500 base sites and serve some 1,000,000 users from the police, fire and ambulance services, together with other public safety organisations. The Bundesanstalt für den Digitalfunk der Behörden und Organisationen für Sicherheitsaufgaben (BDBOS), the federal organisation overseeing the network build and operation, has been working with Airwave since 2012 and the now 50-strong Airwave team comprises experts in many fields, from facilities management and network design, to health and safety aspects and the optimisation of operational processes.

A large share of the overall network operation has been allocated to the country's 16 Bundesländer (federated states) who will manage the base site infrastructure, run the access networks, provide user support and manage the handheld devices and control rooms. This means each Bundesland is a small network operator, with all the associated challenges and resource requirements.

Armed with the experience of building a secure and dedicated network, Airwave knows only too well that a network of this scale does not only rely on having the right people and processes in place, but also on utilising the best systems available on the market. The German network has a different infrastructure supplier to Airwave's Emergency Services Network (ESN) in Great Britain, but the operational requirements and business support systems remain the same. So it was only natural that when the German user organisation saw the requirement for a powerful user management solution, they looked to Airwave.

Airwave's Asset Manager Enterprise (AME) software was used as a blueprint for the new tool which has now been developed, and which

Gerd Altmann/pixelio.de

Transferring knowledge and expertise

When Airwave was approached by one Bundesland to provide guidance and support for underground railway coverage in one of Germany's largest cities, it was clear that our reputation had preceded us.

Germany was at a crucial stage of evaluating companies design proposals for their underground network which included stations and tunnels. Knowing that Airwave had done this before, providing mission critical Emergency Services Network coverage in the London Underground, Germany consulted Airwave for that added reassurance.

A number of local companies had already presented their designs for the proposed network to include stations and tunnels. Airwave Germany, with the support of their colleagues in Great Britain, was invited to validate the different proposals and provide recommendations based on their experience. By visiting the site a number of potential issues were highlighted, most of which were familiar to those dealt with by the teams in Great Britain.

Airwave Germany was able to recommend tried and tested solutions, reassuring the customer that the source of any likely problems was now fixed.

Focus on Germany

will be implemented for all German users. It is a single-integrated solution for asset management, fleet mapping and network provisioning with the ability to track, programme, update and audit all mobile assets.

In addition, the control rooms and local organisations articulated their need for a real-time monitoring tool that integrates all the data from the network into a geographic overview. Insite is a real-time network analytics tool widely used by Airwave's customers in Great Britain to plan and manage major events (planned and unplanned). Developed by Airwave, it gives customers the ability to dynamically adjust their resourcing in response to unpredictable day-to-day demands which reduces pressure on the Network.

For example, Insite is being used by British Transport Police (BTP) to manage their resources on the London Underground and means that their control room operators can log on to the Airwave national service terminal and call up each line on the Underground. All eleven lines are listed and colour-coded according to the London Underground map.

Looking to the future, the greatest potential for further collaboration between Airwave and each Bundesland will be to support the German Emergency Services' day-by-day operations with managed services. Once all the German users have migrated across to the new network, each Bundesland will face a long list of tasks required to provide a reliable service.

In addition, Airwave is well placed to provide the customer with a solution to maintain the TETRA devices to be used on the network. Airwave has the service management expertise and capabilities for device programming, software updates and repairs, thus enabling the customer to focus on their core competencies.

smedia/pixelio.de

The Airwave managed service offering includes the facility management of the 4,500 base sites spread across Germany. The components of the building infrastructure, such as electrical installations and air conditioning, need to be as reliable as the core network. After all, the customer is looking for a partner that can guarantee reliability, and service delivery.

When experience really counts

A customer in Bavaria approached Airwave to provide a consultancy service to set up their user support organisation. Through a series of interviews and background research with the customer, Airwave Germany approached their colleagues in Great Britain to gather as much factual information as possible to support the bid, such as:

- How does Airwave effectively manage 300,000 users?
- How does Airwave maintain 3,800 base sites?
- How many people are required to make this possible?

The Airwave team in Great Britain analysed the frequency and location of incidents from information gathered by the Network Management Centre (NMC), including the set up of the shift organisation and the required levels of training and education for the service centre staff, and then took an even closer look at the German team's structure in relation to available resources.

The Airwave model for people, resources and processes was then transferred to the customer´s organisation, taking into account the specifics of the German TETRA network environment. Additional documentation, including a set of recommendations for the next steps, completed the project.

Information on how the NMC operates was particularly valuable as a team from Great Britain spent time with the customer to fully understand their requirements.

Evolving critical comm

Richard Bobbett, Airwave CEO

With long term evolution (LTE) – or 4G – the current communications buzzword, Richard Bobbett, Airwave CEO, looks at how critical communications will evolve to take advantage of new technology.

In considering LTE, and how it could change the way that operators deliver mission critical communications, we need to take a step back and look at what LTE really means. LTE is the first technology since the emergence of TETRA/ P25/ Tetrapol that is considered/ deemed capable of delivering the future functionality of the emergency services.

What do I mean by that? Well, TETRA has a very fast call set up time, so if you think of using your mobile phone, you typically would go to an address book, select the number, press the green button, wait a few seconds for a ring tone and an answer. If you're a police officer who is facing an immediate threat, somebody with a knife, for instance, on TETRA you press the button and within 300 milliseconds have the ability to talk. So the fast call set-up times are inherent to the emergency service requirements. LTE is the first technology since the development of TETRA that has the core building blocks that will enable those fast

call set-up times. What LTE will do then of course is to offer the ability to bring broadband data, as well as voice to the emergency services.

LTE is a natural transition, and it is a transition that we will expect to make in the future, but the question is when will LTE be ready for mission critical voice? The current deployments of LTE in Great Britain have no voice applications on at all, and the commercial network operators are actually offloading voice back to 2G and 3G networks.

It's not simply a question of technology choice, it's actually a question of when is the right time to make the transition for users, bearing in mind the mission critical nature of our customers' services and what they do. Airwave today provides a guaranteed level of service, always there. Most importantly, it supports the emergency button function, which is the first responders' ability to summon assistance if there is a life-threatening situation. In Great Britain, every six minutes a police officer, firefighter or paramedic presses their emergency button because they believe they are facing a life-threatening situation to them or to a member of the public.

This will form part of service transition, which is a question of timing. We believe that LTE will develop and will develop quite rapidly, and so there is a time when one feels it is right to migrate to LTE.

Of course, to deliver critical communications over LTE, spectrum is required. Most countries in the world are looking to secure spectrum for a public safety LTE network, for example the US has already made spectrum available for the emergency services. However, currently the UK government's position is that it is not pushing for dedicated spectrum, preferring to rely instead on the existing spectrum owned by the mobile network operators. Airwave is pressing for spectrum to be made available for the public safety services, and we believe there is a way of managing the public safety spectrum that will protect the value to the taxpayer. This is effectively doing what is being proposed by Ofcom, but the other way round.

To explain, the government sells the spectrum to the mobile phone operators who then allow the emergency services to use it when they need it. We are proposing: give the spectrum to the emergency services, who can lease it to the mobile phone operators when they don't need it – that, we believe, protects the exclusivity of the service when first responders need it but will raise revenue in quiet periods.

If you do it the other way round, by the time first responders get access it will be too late. Putting the emergency services in control is a much safer approach in terms of protecting levels of service to the British public. This way also protects the commercial value of the spectrum as the mobile operators can use it when it's not needed by the emergency services.

The mission critical services that Airwave provides to the core emergency services continue to evolve to match the capabilities of the bearer technology. Our services will always meet today's standards of reliability, coverage and security for mission critical voice and will also include a suite of mobile data apps as well, some of which we've already launched.

It's an ever moving space – so no-one can say today what the services will look like in, say, 2020. However, be assured that Airwave is developing all the tools and all the technologies to deliver efficient and effective mission critical communications services for today, for tomorrow and well into the future.

Airwave's 4GMax empow Hampshire Fire & Rescue with high-speed data on

Headquartered in Eastleigh and serving the county of Hampshire on the south coast of England, Hampshire Fire and Rescue Service (FRS) maintains a fleet of 243 vehicles (76 frontline fire appliances), and each year receives around 40,000 999/112 calls and attends some 25,000 incidents.

Hampshire FRS uses a wide range of mobile technologies, communications and IT in order to access the right information to enable the crews to respond more effectively to all types of incidents.

The main fire appliances employed by Hampshire FRS for command and control at incidents are the Incident Command Unit (ICU) and Command Support Unit (CSU). Together with the Major Incident Room, these form the vital link between the Incident Command System and Fire Control ensuring that the teams in the field receive all the data essential for the emergency. They are crewed by an Incident Command Team (ICT), trained personnel on call 24/7 to provide a safe and effective means for managing operations at all incident levels, including Silver and Gold.

Designed to function as a standalone facility, the ICU vehicle facilitates incident communications and enables full incident command and control in remote locations. It can act as a multi-agency command centre by linking directly to the Fire HQ, as well as to police and other emergency response organisations.

For voice and data communications, the ICU is equipped with UHF and Airwave TETRA emergency radios, Airwave Firelink* mobile data terminals (MDTs), and several software-driven information systems connecting multiple sites, including all 52 fire stations, the Hampshire FRS HQ, and 16 partner organisations.

The ICU was originally fitted with a GSM modem based on GPRS, EDGE and 3G, and although more than adequate for several years, the explosion in smartphones meant that bandwidth would become constrained at peak traffic times, with patchy network coverage.

"Wireless communications were not always readily available," said Paul Turner, Operational Projects Manager,

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demand

Information and Communication Department, Hampshire FRS. "Although we are not untypical in serving rural areas, mobile phone coverage is not brilliant in much of the county. And with all the kids using their smartphones after school and us being in an industrial area, the rate of bandwidth available was often terrible."

The ICU was fitted with a satellite antenna to provide an alternative wireless connection between the ICU and Fire HQ, and with 3G coming under increasing strain, the system was then toggled to use satellite first. This not only increased the cost of wireless connectivity, but meant that in areas such as the New Forest, line of sight to the satellite could be obscured by trees, leaving the ICU with no high-speed wireless data connectivity at all.

Airwave's broadband aggregation solution 4GMax is a cost-effective service that brings together the signal strength from multiple mobile operators. By combining bandwidth from up to four commercial mobile networks, 4GMax delivers increased uplink capacity enabling applications, such as live video streaming, from vehicles on the move. It also provides an effective alternative to satellite communications or fixed links.

"4GMax has definitely enabled cost savings in terms of data connectivity, but this is secondary to the fact that reliable broadband provides both us and the public with a safer environment, which is what we are all about," said Paul.

"When we saw that 4GMax aggregates the bandwidth across the carriers, we realised that this would solve a lot of problems for us. We were also interested in its compact size and the fact that it could be powered directly from the ICU's battery. Unlike our legacy GSM modem, 4GMax doesn't just lock on to one network and only switch when the signal fails, but switches intelligently to the network(s) offering the best coverage and bandwidth."

According to Paul, 4GMax was installed in the ICU within a few

Above: Airwave's 4GMax in action in the Hampshire Fire and Rescue Service Incident Command Unit.

hours. “I was impressed with how easy the graphical user interface made the integration, and how quickly it was implemented. It is extremely user friendly, and it was actually the installation of the cables that took the longest amount of time.”

“Within hours of the installation taking place, the command unit was deployed to a large property thatch fire in the New Forest where it performed faultlessly to the extent that the on board crew expressed their surprise at how fast the IP connection was.”

With 4GMax, Hampshire FRS is able to link all back office systems with those of the ICU and update dynamic files in near real time. Microsoft applications, email, internet access, Google Maps and other relevant documents can be delivered direct to the ICU via 4GMax. Meanwhile, building and site plans can be downloaded to the smart board in the ICU, displayed onscreen and hand drawn notes added. These are then date and time stamped before being uploaded back to Fire HQ at the conclusion of the incident.

“The crew aboard the ICU can see a table of all the vehicles deployed to a job, and they know who is on-site and who is on their way,” said Paul. “They can also use this information as a management tool for seeing who arrived first and who needs relieving, which is vital if a large job goes on for a longer period of time. Breathing apparatus is where this is a major concern, as the working time for firefighters is quite short due to the atmosphere they are working in, so we need to turn this around quite quickly.”

Further applications of 4GMax are now being investigated by the fire service.

“It could replace the GSM modems within fire appliances that are too small to be fitted with a satellite dish, and could also be put into a flight case to provide a portable office,” said Paul. “Given that the solution employs a switched router, one unit could support multiple PCs in a strategic holding area.”

Hampshire FRS is also looking to implement 4GMax in its CSU, as well as its community support vehicle. It will also be supporting a new Accountability System developed by the fire service that identifies the resources deployed on the fire ground by name, abilities, crew status, location, and whether or not they have been allocated to a specific sector.

A further potential application for 4GMax is to run voice over IP for the ICU, which has an extension number from Fire HQ’s telephone system. This could potentially support all the telephony facilities employed by Hampshire FRS, such as conference calling, dialing in/out to the public switched telephone network (PSTN), and free calls over the wide area network (WAN).

**Firelink is Airwave’s digital radio and mobile data solution for the Fire and Rescue Services of England, Scotland and Wales. Since going live in 2010, Firelink has provided mission-critical communications via Airwave’s Emergency Services Network (ESN).*

Pictures on page 8, 9 and 11 courtesy of Hampshire Fire and Rescue Service.

Right: Hampshire Fire and Rescue Service attends some 25,000 incidents annually.

Effective communications are key to incident management.

4GMax has definitely enabled cost savings in terms of data connectivity, but this is secondary to the fact that reliable broadband provides both us and the public with a safer environment, which is what we are all about.

Paul Turner, Operational Projects Manager, Information and Communication Department, Hampshire Fire and Rescue Service.

Working together through the Airwave Service

The emergency services in Hampshire are maximising the interoperability capabilities provided by the Airwave Network through regular exercises to plan and practise operations that could occur in real life.

Reach spoke with Chas McGill, Watch Manager (Officer in Charge) at Hardley Fire Station, Hampshire Fire and Rescue Service (FRS), Eastleigh and New Forest, to find out more.

"Prior to the Airwave Network, we worked on an old analogue system. I was directly involved with the roll out of the Airwave Service to Hampshire FRS and worked closely with my police colleagues – who were already using it – to understand its advantages. For the fire service, I knew that we could make some really good positive steps forward in terms of communication and how we used the Airwave Service. It allows us to do a lot more than with the previous system," said Chas.

Chas works closely with both the police and ambulance service. "While they use the Airwave Service differently to us, our close ties in Hampshire means that we're able to work effectively together especially during an incident."

"The role of Airwave during an exercise is to bring everyone together in order to test how we interoperate with each other using the identified talk groups and through the control rooms using a hailing talk group."

"The successes we have achieved to date could not have been achieved without Mike Batten from Hampshire Constabulary. Mike has tirelessly campaigned with us and other users from across the emergency services to highlight the importance of interoperability. By organising a schedule of exercises – both large and small – we have instilled an appreciation of the Airwave Service and how to use it to our advantage."

Mike takes up the story, and tells how a chance encounter some six years ago brought them to this point.

"When I was posted to Southampton in 2008 I continued in my role as one of the Constabulary's Hazardous Materials and Items (Hazmat) advisors. I was lucky enough that my inspector at the time gave me a free rein to develop the role locally and network with partner agencies and industry. It was at one of the first incidents that I was sent to that I met Chas. I asked how I could help and was advised that the protocol dictates that the fire crew goes in first

Chas McGill, Watch Manager (Officer in Charge) at Hardley Fire Station, Hampshire Fire and Rescue Service, Eastleigh and New Forest, has been honoured with the Chief Officer's Special Recognition Award Safer for his work on embedding the Airwave Service with the Hampshire service and promoting it to the police and other agencies. Chas is seen here with Mike Batten, Hampshire Constabulary Hazmat Advisor.

"It's all about sharing information and experiences with our colleagues," Chas McGill, Watch Manager at Hardley Fire Station, Hampshire Fire and Rescue Service, Eastleigh and New Forest.

"Our relationship has grown to encompass more operational issues with a key focus on interoperability," Mike Batten, Hampshire Constabulary Hazmat Advisor.

and that I should wait. So I did just that: I waited. And to their surprise, I was still waiting when they had finished!"

Chas and Mike started talking. "Over the years the relationship has grown as it makes good sense to work together. And while we initially started out discussing Hazmat issues, it has grown to encompass more operational issues with a key focus on interoperability," said Mike.

Chas and Mike set about planning their first exercise and before long, they were working with the Joint Emergency Services Interoperability Programme (JESIP) to showcase how they planned ahead for the events, working with the different services to ensure that the incident is as lifelike and realistic as possible.

Encompassed within the Southampton area is Fawley Refinery, the largest petrochemical facility in Europe, which also has a large number of associated supporting chemical industry co-located with it. The city is also home to one of the largest deep water container ports in the UK, an international cruise terminal, Southampton Airport, the main London/ south coast railway line with the M27, M2 and M3 Motorways also running around the city – Hampshire has the largest mileage of Motorway network in the UK.

Mike described an example of where communications interoperability becomes paramount. "If we have a hazardous materials incident, we're faced with a number of communication challenges. The police will not enter the hot zone due to the potential risks presented by the materials involved. The Ambulance Hazardous Area Response Team will deal with casualties and if they are wearing body worn video cameras can go to the ambulance command vehicle to watch the live feed. The police can then work with the ambulance crew to identify the casualties by communicating with their command and control officer via their handsets."

"Once the casualties are away from the scene, the police step in, and manage the contact with families. There's no need for each service to get involved with each others' specific responsibilities, but by communicating on the Airwave Network, we can ensure that everyone gets what they need to do their job."

Mike explained that an exercise will kick off with a call going to the control room who in turn inform the participants. "We do it this way as it immediately gets people into the mindset of using their Airwave handset and highlighting the fact that if the telephone system was down, how would we all communicate?"

The exercises are in themselves complex and are designed to test resources, relationships and capabilities, as well as off-site resources. "When we planned the first exercise, we knew that communications were key to the success of an incident and therefore one of the things that we insist on during each exercise is that at some point we want a participant to talk to their opposite number in another agency at a remote point. This highlights how well they understand the radio and its functionality," said Mike.

Work is already well underway for an exercise which will include all three blue light services, the RNLI, Coastguard, Ministry of Defence, harbour master, ship's crew and two helicopters.

"There will be nine different points of contact and each will be on a different talk group. The purpose of this exercise is to make it possible for a fire crew to make their way on to a police launch, which will then take them out to a waiting ship to establish a bridgehead. They will then need to contact the RNLI and Coastguard to initiate an evacuation by helicopter," said Chas.

Onshore will be a full complement of emergency services personnel who will all have predetermined roles to ensure that the incident, despite being an exercise, will be as lifelike as possible.

"It will be interesting to see how people who have never worked before respond under pressure," said Mike.

Interoperability – unique to the emergency services since the Airwave Network came into being some 13 years ago – means that for the first time members of different public service organisations can communicate with one another.

NWAS receives more than one million emergency calls a year

New alert service means faster response time to medical emergencies

The North West Ambulance Service NHS Trust (NWAS) is the driver behind an innovative and unique new service being provided by Airwave.

Cumbria and Lancashire have more than 900 Community First Responders, making up 75% of the total Trust volunteer base. With response times critical in medical emergencies, a new approach was needed to ensure volunteers could be alerted to incidents in their location, and to enable volunteers to respond to the control centres with regard to their availability. Mark Evans, NWAS Community Resuscitation Manager & British Heart Foundation (BHF) Healthcare Practitioner for Cumbria and Lancashire, takes up the story:

"Our legacy system was based on standard analogue pagers, so the control centre didn't have confirmation that alerts had been received, and the volunteers didn't have an immediate way of acknowledging the alert.

"With the establishment of a dedicated 24-hour control room for the volunteers, the system improved but the paging was still based on an automatic system where mandatory information had to be input before the message was sent out – so if the controllers didn't have all the information about the incident, it could take several minutes for the message to be sent. It was also still a one-way paging system, with volunteers having to call back via standard fixed or mobile telephones

The North West Ambulance Service NHS Trust (NWAS) provides a 24/365 emergency service, as well as the non-emergency Patient Transport Service. NWAS receives more than one million emergency calls a year, handled by the Trust's emergency control centres based in Manchester, Liverpool and Preston.

NWAS is the second largest ambulance trust in England, providing services to a population of seven million people across a geographical area of approximately 5,400 square miles. Headquartered in Bolton, the Trust has 109 ambulance stations, four area offices, three emergency operations centres, one support centre, two patient transport control rooms and two Hazardous Area Response Teams (HART) buildings.

Mark Evans has worked for the NHS since 1997, and has been in his current role since 2011, looking after his region's Community First Responders, Air Ambulance assets, public education and training. The NHS is part of the family – Mark's father Geoff has just retired from the NHS as a supervisor, and Mark's wife Nicola is an A & E nurse.

On average, the Airwave TM alerts arrive thirty seconds quicker than either the old paging service or mobile phone texts, but the difference can be up to three and half minutes. Thirty seconds makes a massive difference to response time, and time is critical in medical emergencies.

Mark Evans, NWAS Community Resuscitation Manager & British Heart Foundation (BHF) Healthcare Practitioner for Cumbria and Lancashire

– assuming they were near one, and assuming, in the case of mobile, there was coverage – and in this rural area there often isn't.

"We also had no way of knowing where available volunteers were at any one time, so all volunteers would get all pages, irrespective of location.

"As the Trust is a user of the Airwave Service, we realised that what we needed was a service that used the same network – so we could alert the volunteers immediately, send them to incidents more efficiently, and keep track of them to ensure their safety.

"So, a sophisticated two-way pager device with GPS capability was identified – it's called TETRA Messenger but we call it Airwave TM – and so began much work to successfully integrate the TM service into our control rooms, exhaustively test and trial the service. Airwave was completely supportive of the whole project, joining us for regular meetings and ensuring their technical people worked alongside us until we were happy that the service was working properly. In particular, we specifically tested the service in rural areas where radio coverage can be a problem, to ensure it would be effective.

"We had a ten point plan for roll out, introducing the Airwave TMs to specific areas and ensuring all were working correctly before implementation in the next area. We have now just completed the initial roll-out, and 300 of our volunteers are now equipped with the pagers.

"And what are the benefits? Well, our control rooms can now send instant messages within a three-mile radius of an incident to volunteers who have checked in as being available. Once signed on duty and available volunteers appear on our computer-aided design (CAD) alongside our emergency vehicles. If an emergency call is received then the controller can identify immediately what resources they have available and allocate these accordingly. Volunteers can respond instantly about whether they can attend, they can check in with the control room when arriving at the scene, and check out once the ambulance has arrived.

"If there are any issues, or if they cannot find the incident, or they feel they are in danger, they can alert the control room immediately either via status messaging or using the dedicated panic button. The control room can send assistance either in terms of information or sending police or other support directly to the volunteer. The control rooms will also track the device, so if it drops off the network or remains static in one place, assistance will be sent. We value our volunteers immensely, and it is great that this new service means we can support them more.

"Airwave has supported us throughout the roll out, with technical support, and helping to address concerns. Initial user audits show that some 75 per cent of users say the Airwave TM is an improvement over the old service. We have had minimal issues with the devices themselves, but we have a 24-hour support centre to support the volunteers – we can remotely fix the device if possible, or operate a 72-hour replacement service.

"It is noticeable how many emergencies the volunteers are attending, and this can be partially attributed to the new pager. It increases the volunteers' availability, and the new technology has created a good deal of interest and motivation. Even if volunteers are away from their own 'home patch', if they have their pager and medical kit with them, they can be available anywhere within our region to assist.

"On average, the Airwave TM alerts arrive 30 seconds quicker than either the old paging service or mobile phone texts, but the difference can be up to three and half minutes. Thirty seconds makes a massive difference to response time, and time is critical in medical emergencies."

Community First Responders

Community First Responders are volunteers who give their time freely to help save lives in their community. Responders are everyday members of the general public who are trained in the use of automated external defibrillators and the treatment and control of a wide range of potentially life threatening conditions.

In cases of heart attack it has been identified that early intervention can result in a significant improvement in prognosis. First Responders provide support to the regular Ambulance Service by attending serious and life threatening 999 calls in and around the community to provide the earliest possible intervention for patients in the first few minutes until the arrival of an ambulance.

Focus on Community First Responder John Teasdale

John Teasdale has been a Community First Responder with NWAS for eight years. He responds in the Northwich area and provides around 15-20 hours a week voluntary cover for NWAS, often arriving on scene before the ambulance or rapid response vehicle.

John told Reach how the new Airwave service has benefited his work. "The Airwave TM has improved communication significantly with Emergency Operations Centre and it has revolutionised the way in which I respond. It has incorporated us seamlessly into operations and the efficiency of the device is outstanding.

"As well as improving despatch times to incidents it has also given me much more reassurance for personal safety. The addition of the two-way messaging, tracking and panic facility makes this an invaluable tool. The ability to communicate to control with vital updates such as 'patient deteriorated' or 'patient cardiac arrest' now frees me up on scene to focus on delivering patient care and reassurance.

"Take the example of a call I received via the Airwave TM – which was some two minutes ahead of the analogue device. I immediately responded to the Airwave message with 'can attend' and given the incident description. By the time I had reached my car, Control had allocated me and I was able to mobilise.

"En route I was unsure of the location of the incident as it was given solely as a local leisure complex, so contacted Control by phone as I approached. Control was immediately able to identify my location using the tracking system and guided me to within 20 yards of the patient. This undoubtedly saved me minutes of walking around the complex to find the location.

"Upon arrival I could confirm that this was a cardiac arrest and as the first arriving resource was able to control the resuscitation effort, which continued until the arrival of the ambulance. The crew arrived several minutes later and I continued to work with them throughout. Happily, with the patient we had a ROSC (return of spontaneous circulation) followed by spontaneous breathing.

"The Airwave TM has been invaluable. Had I not been deployed via this device, I can guarantee that I would have been delayed by four to six minutes. It is efficient, robust and by far worth the investment that NWAS have made."

Supporting Glasgow 2014

The Glasgow 2014 Commonwealth Games brings together thousands of athletes, volunteers and spectators for an unforgettable festival of sport and culture. In the previous edition of Reach, we reported on the work being undertaken behind the scenes to ensure that Airwave's Emergency Services Network (ESN) was enhanced to deliver the additional capacity required by the multi-agency Games support services, led by Police Scotland. In this edition, Reach takes a look at the final preparations.

> **We applied three principles while developing the plan – it had to be operationally effective, technically deliverable, and affordable value for money – it has to be defendable in an audit, and deliver good value to the taxpayer.**
>
> Chief Inspector Andrew Mosley, Police Scotland

Police Scotland's planning for the Games began in 2012. Working with the Airwave team, the requirements were explored, including the levels of coverage and capacity needed to support events over 11 days across 14 venues. These include the Athletes' Village, built over 35 hectares to accommodate some 6,500 competitors and team officials.

With more than 5,000 additional users expected on the ESN in the Glasgow area during the Games, the capacity plan identified the need for two additional temporary sites to cover the Scottish Exhibition and Conference Centre (SECC) and the Athletes' Village, in addition to the 15 sites that already serve the city. The SECC Precinct is the largest venue precinct of the Games, hosting the competitions for six sports – gymnastics, boxing, judo, netball, wrestling and weightlifting/ powerlifting. During Games time it also hosted the International Broadcast Centre and Main Press Centre. Extra capacity was also needed for air-to-ground serving sites.

The Network enhancement work was carried out in close consultation with Police Scotland, with an Airwave Commonwealth Games steering group meeting each month. The Airwave team brought its experience from the London 2012 Olympic and Paralympic Games to Glasgow, and supported Police Scotland during the Glasgow Games with a dedicated event control team. This included field engineering resources, event management personnel working from Airwave's Network Management Centre (NMC), and End User Engagement teams supporting the three Games' muster sites to assist users and gain feedback on behalf of Police Scotland.

Chief Inspector Andrew Mosley of Police Scotland led the multi-agency public safety support for the Games. "We have done nothing like this before," he told Reach. "We looked at all the Games venues against the existing mast footprint and the number of police and other agency resources that will be in the area, to come up with a plan of the resources required.

"We applied three principles while developing the plan – it had to be operationally effective, technically deliverable, and affordable value for money – it has to be defendable in an audit, and deliver good value to the taxpayer.

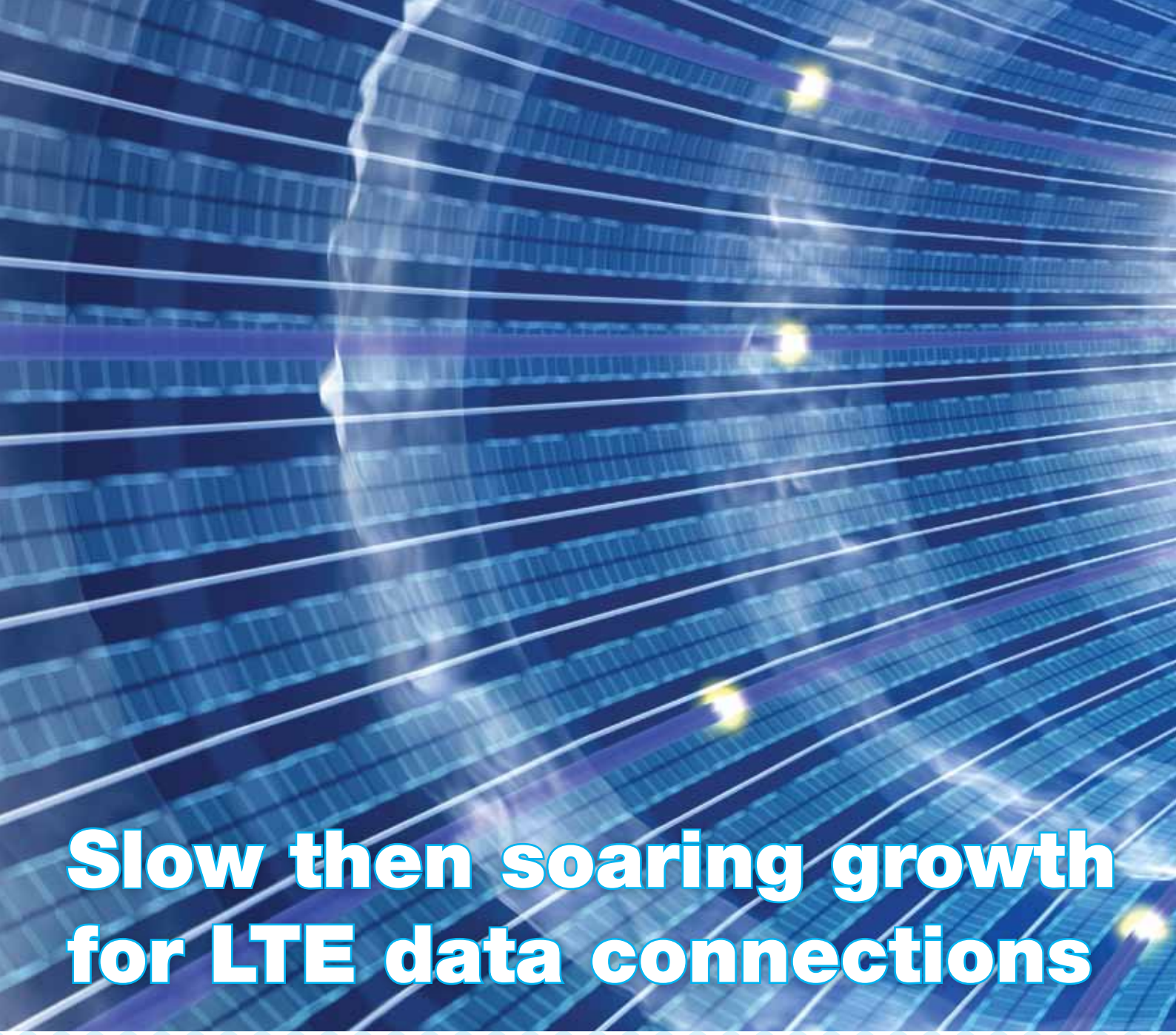
"The challenge was to tick all three boxes, and it has taken a lot of hard work, but we have a strong working relationship with Airwave, and the monthly meetings meant challenging questions could be asked and any issues quickly addressed.

"Thousands of additional users from Scotland and across Great Britain provided us with mutual aid, and these were managed by the multi-agency coordination centre adjacent to our control room.

"The Games were managed on dedicated talkgroups, and briefing packages were sent to all the mutual aid forces, including the 'z cards' of quick start information produced by Airwave, along with specific advice on the use of point-to-point and telephony during the Games. Our usage on the ESN was monitored using Insite*."

**Insite is Airwave's powerful Network monitoring tool. It provides a live view of the customer's Airwave Service in a map view, showing base sites and status flags, delivering real-time traffic reports and dashboards, and dynamic radio coverage plots with historical, live and future views.*

Pictures courtesy of Graeme Ford



Slow then soaring growth for LTE data connections

An independent look at the LTE impact on critical communications

By Elizabeth Mead, Market Analyst, IHS

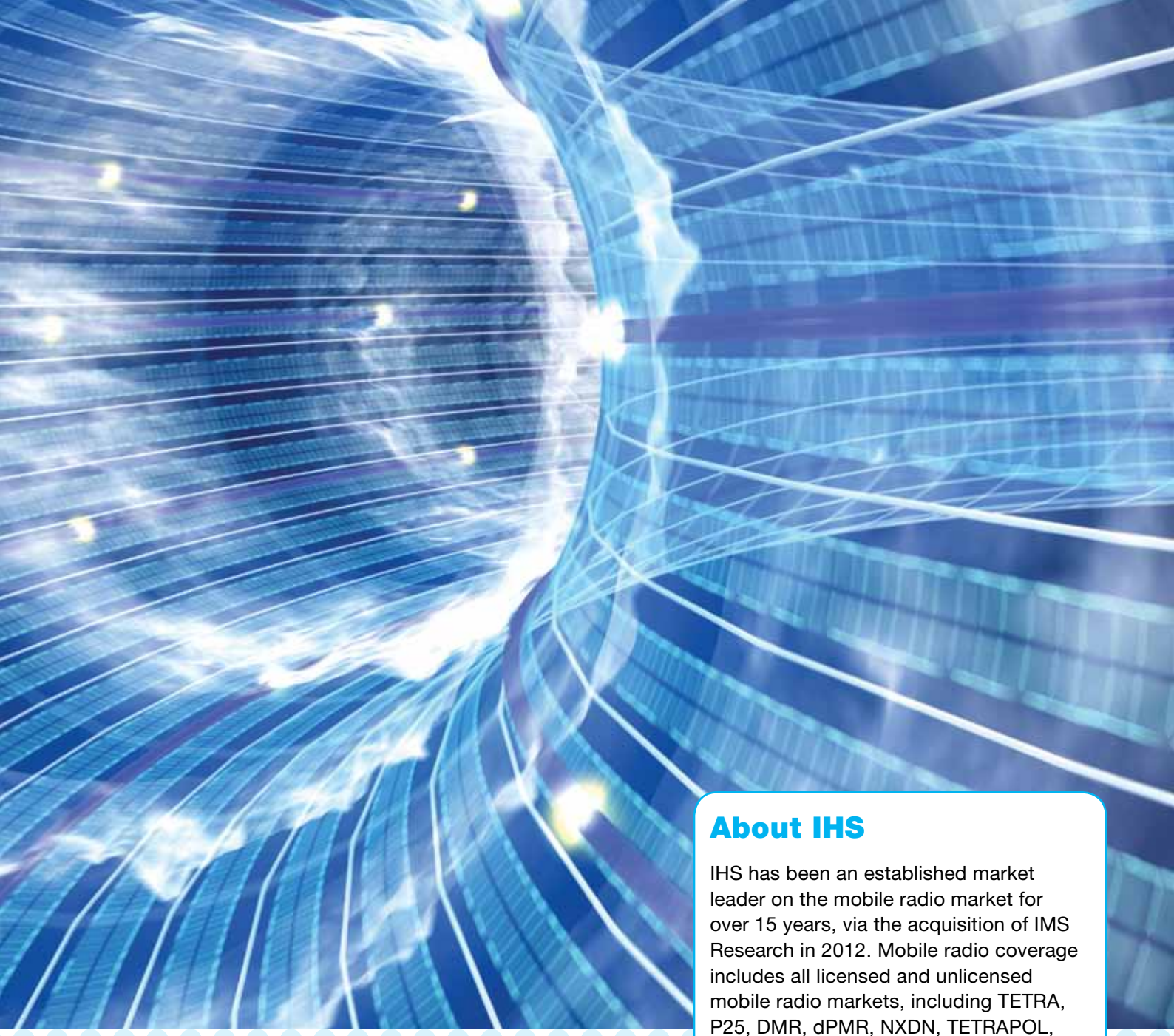
The private LTE market is expected to show slow growth over the few years, but longer term the amount of data connections are expected to soar, according to a study from information and analytics provider IHS.

Demand for data is increasing in a number of regions worldwide, as more users expect more sophisticated and high-bandwidth applications on their networks. Traditionally, this type of functionality has been limited on traditional LMR networks, as narrowbanding has reduced the ability to transfer large data packets. Surely, therefore, the industry is crying out for a solution that is able to offer both the traditional LMR systems in combination with high-bandwidth capability.

So far, however, the uptake of private LTE – the forerunner in the PMR broadband race – has been slow, with fewer networks operational than previously expected. There have been spectrum allocations that have increased uptake of LTE networks – such as allocation in China and the United Arab Emirates, and of course the roll out of FirstNet in the United States. So there have been some success stories for LTE.

However, it is key to note that harmonised spectrum allocation may take many years, especially in a disaggregated Europe where a number of activities to provide cohesive spectrum policy are still ongoing. As such, the impact of LTE in the short run is expected to be limited. Instead of using LTE for high-bandwidth applications, some users currently have to find alternatives.

TEDS technology, for example, offers enhanced data rates as an overlay to traditional LMR networks, and therefore presents a mid-term solution to the increasing need for higher data throughput capabilities without the need to wait for LTE infrastructure and spectrum harmonisation. Importantly, however, IHS projects that these



networks will later be transitioned to private LTE once spectrum becomes available, as TEDS – despite enhanced data rates – does not offer the extensive data packaging functionality that LTE can offer in the future.

However, IHS does not expect LTE to be rolled out as a complete critical communications solution. Traditional PMR will still hold the majority of the voice market for a long time to come, as LTE providers have not yet developed an LTE solution that can successfully replicate the benefits and attributes of traditional PMR systems, despite ongoing work with 3GPP. As such, IHS expects that a hybrid PMR / private LTE will be the mid-term solution for critical communications requirements.

There is no doubt that LTE will emerge as a key solution in the critical communications industry, offering increased data rates and increased availability of data-heavy functions in the field. Despite the prospect of PPDR being allocated its own spectrum, LTE spectrum will typically be auctioned off to commercially-operative national service providers such as telecoms and multi-service operators as well, where IHS believes that partnerships between critical communications organisations and these operators is essential in developing a viable path for LTE usage in the PMR market.

This article was first published at the Critical Communications World event in May 2014.

About IHS

IHS has been an established market leader on the mobile radio market for over 15 years, via the acquisition of IMS Research in 2012. Mobile radio coverage includes all licensed and unlicensed mobile radio markets, including TETRA, P25, DMR, dPMR, NXDN, TETRAPOL, OpenSky, EDACs, Analogue, PMR 446, and others. The Critical Communications group provides a comprehensive portfolio of critical communications market research reports, including worldwide studies, technology specific reports and quarterly EMEA and Asian shipment tracking services. These reports are tailored to meet the needs of business planners, marketing managers and executive management.

IHS' range of products and services includes detailed annual reports, quarterly market trackers and customer surveys as well as off-the-shelf studies. IHS also offers custom research and strategic consultancy services and has successfully completed projects for some of the World's largest mobile radio companies.

Pronto's mobile data capabilities are being used by quarter of police forces throughout Great Britain.

City of London Police selects Airwave as their mobile data partner

The City of London Police has signed up to implement Airwave's Pronto electronic notebook and suite of policing applications for their police officers.

Officers will be provided with devices pre-loaded with applications that will give them remote and mobile access to all local and national backend systems. These include the Police National Computer (PNC) as well as the force command and control and crime and intelligence systems.

The City of London Police is taking a phased approach to the installation of their existing portfolio of policing process onto the devices and Airwave is working with them to prioritise the different applications in order to ensure a smooth transition.

Chief Superintendent Dave McGinley of City of London Police said: "We are delighted to be working with Airwave. Key to our decision were the proven benefits of Pronto's mobile data capability which is already being used by police forces throughout England, Scotland and Wales."

The programme with City of London Police will be managed and delivered by Airwave's wholly owned subsidiary, Kelvin Connect.

Devon and Cornwall Police chooses Pronto

Devon and Cornwall Police will be implementing the Pronto electronic notebook and suite of mobile policing applications for improved efficiency and cashable savings on paperless policing.

The mobile data programme will be managed and delivered by Airwave's wholly-owned subsidiary, Kelvin Connect.

Officers will be issued with android devices pre-loaded with applications that will give them, for the first time, remote and mobile access to local and national backend systems. These include the Police National Computer (PNC), as well Steria Storm, Devon and Cornwall Police's command and control and the Unifi crime and intelligence system.

Devon and Cornwall Police has prioritised a range of processes that will allow officers to be more efficient, proactive, productive and visible, providing access to up to date information on which to make better informed decisions faster and improve public service and confidence. Moving to a paperless environment will streamline the process and improve the quality of data submitted. The initial processes include direct crime entries, electronic witness statements and ticketing.

Devon and Cornwall Police Project Executive Sandy Goscomb said: "Devon and Cornwall feel that with the market place having now matured, the time is right to invest in a mobile data solution. We look forward to working with Airwave to deliver real operational benefits for our officers and an improved service to the public we serve."

Striking Gold at the RoSPA Occupational Health and Safety Awards

RoSPA 2014 GOLD Award

Airwave has won Gold in the 2014 Occupational Health and Safety Awards run by the Royal Society for the Prevention of Accidents (RoSPA). The award was presented during a ceremony at the ExCeL in London.

The RoSPA Awards, which date back 58 years, recognise the commitment to continuous improvement in accident and ill health prevention at work. Entrants are judged on their overarching occupational health and safety management systems, including practices such as leadership and workforce involvement.

David Rawlins, RoSPA's awards manager, said: "The RoSPA Awards encourage the raising of occupational health and safety standards across the board. Organisations that gain recognition for their health and safety management systems, such as Airwave, contribute to a collective raising of the bar for other organisations to aspire to, and we offer them our congratulations."

Richard Bobbett, Airwave CEO said: "We are delighted to learn that we've won gold as it recognises our commitment and dedication to service excellence. We work 365 days of the year to ensure that our service levels and standards surpass expectations and this would not be possible without the outstanding commitment from everyone at Airwave who plays their part in achieving this."

Bikers Ride In to support the Air Ambulance

The Warwickshire and Northamptonshire Air Ambulance (WNAA), one of Airwave's chosen charities, will have a police escort for this year's Ride In motorbike cavalcade, heading for the Brackley Festival of Motorcycling.

WNAA National Partnership Manager Tracy Grunwell organised the first Ride In last year, and is determined that the 2014 event will be even bigger and better.

Tracy told Reach: "I have been supporting Brackley Festival of Motorcycling for seven years but it was only last year we decided to add the Ride In. So many people were riding in and I thought - let's all ride-in together and have some fun and get to know each other at the same time - and it worked!"

The Ride-In is on Sunday, 17 August with start points in London, Wellingborough and Hinckley. The riders will converge at Silverstone, then ride as one long cavalcade with police motorbike escorts.

"It really does create a massive spectacle," said Tracy. "Last year we had more than 500 bikes, which created a four-mile Ride In. We get very generous support from all types of bike groups and hope to engage with the attendees on the day, and with well over 15,000 bikers attending the Festival it's something we will continue to try and improve and develop."

To find out more, please visit www.theairambulanceservice.org.uk/ridein

New Chief Executive for Fire Fighters Charity

The Fire Fighters Charity, one of Airwave's chosen charities and the UK's leading provider of support and rehabilitation services for the fire service community, has appointed Dr Jill Tolfrey MSc MCSP as its new Chief Executive Officer.

Dr Tolfrey joined The Fire Fighters Charity as its first clinically qualified Director of Operations in November 2010. With a personal interest in rehabilitation and re-ablement, she has undertaken research into living with long term conditions and the experience of illness.

As a member of the UK Rehabilitation Council in its development form, Jill has pioneered the Charity's drive to reframe its beneficiary services to develop Charity-wide integrated services that are re-ablement focussed.

Ken Seager, Chairman of the Board of Trustees, said: "Jill's doctoral research background in personal and professional development, along with her clinical research in exercise physiology and health psychology, stands her in excellent stead to take the helm of our Charity."

The Fire Fighters Charity is the leading support service for fire fighters in the UK. Jill takes up the CEO post following the retirement of John Parry, who headed up The Fire Fighters Charity during a three-year tenure having served with a number of fire brigades over a distinguished thirty-year career.

Every year The Fire Fighters Charity directly helps more than 4,500 people in the fire community to be fitter, healthier and happier. It costs more than £8m every year to meet the varied physical and psychological needs of the fire and rescue community, and with no government funding, the Charity is completely reliant upon donations from the general public and fire community.

With Her Majesty The Queen as its Royal Patron, The Fire Fighters Charity works to provide support and rehabilitation services for the fire and rescue community. For more information, please visit www.firefighterscharity.org.uk

Dr Jill Tolfrey

Dyfed-Powys Police transformation of ru

Dyfed-Powys Police safeguards people living, working and visiting the counties of Carmarthenshire, Ceredigion, Pembrokeshire and Powys. The area has a population of more than 488,000, and that is significantly boosted with tourists each year. The force area covers a land mass of more than half of Wales.

The force was formed in 1968 with the merger of the four County Constabularies. Geographically it is the largest police force in England and Wales, with more than 350 miles of coastline and many remote rural communities. The area stretches from St David's in the west across to Crickhowell in the east, and up to Welshpool and Machynlleth in the north.

Dyfed-Powys Police is leading the way in achieving greater efficiencies as it starts issuing officers with Airwave's Pronto electronic notebook carrying a suite of applications that will transform the way this rural area is policed.

Pronto is an electronic notebook and application suite that gives officers the ability to access vital backend systems from the frontline. Officers can key in information at the point of need and then reuse the information digitally across the full range of policing processes available via Pronto.

The first stage of the implementation sees officers working in Brecon and Carmarthenshire issued with the latest in handheld devices so they can access information, force systems and undertake various processes. They will use Pronto on the Samsung Galaxy 3 Note for a two month pilot, before Pronto is rolled out to officers working throughout the force.

Officers using the electronic notebooks will have remote and mobile access to local and national backend systems on the force command and control and crime systems and the Police National Computer (PNC). They will be able to log information; issue fixed penalty notices and various traffic offences as well as being able to record crime and incidents of domestic abuse.

Dyfed-Powys Chief Constable Simon Prince said, "The benefits of officers having access to systems and information whilst out on

lead
ral policing

Officers from Dyfed-Powys Police – ready to make the most of mobile data

patrol are clear, particularly in our rural areas where the officers are working far from a station. Being able to complete tasks once that synchronise with force systems will save time and effort.

"Officers will not be in stations at computers, they will be out and visible in our communities. Mobile digital policing is a key part of our wider Police and Crime Plan where we are changing the way we work in order to put the public first."

PC Ben Aston works in Carmarthen and is one of the officers who have been part of the Pronto development and testing team. He said, "This is easily the most significant development I have seen for those working on the front line since I joined seven years ago.

"The device will reduce the amount of time spent duplicating data on different paper forms for different departments and push information from the front line straight to the back office in real time and without delay. While we are on the streets we have the ability to access and share information and intelligence assets that we would usually need to travel back to the police stations to access or request through a third person.

"The most exciting part of the project is that it will continuously develop. We have already come up with new ideas and future uses for the device which will enable us to carry out our roles more efficiently."

Dyfed-Powys Police has prioritised a range of processes that will move the force further towards paperless policing. These include direct crime, Domestic Abuse, Stalking and Harrasment (DASH) forms, as well as collision reports and other traffic processes.

The Dyfed-Powys Pronto programme will be managed and delivered by Airwave's wholly-owned subsidiary, Kelvin Connect.

Double first for Dyfed-Powys

Dyfed-Powys Police were quick to see the benefits of the Pronto application, and is the first police force to implement the processes for image search and multi-officer event management.

Officers are using Pronto to search the PNC and the local force databases for information and images of a person of interest. Image search can mean immediate confirmation of identity in a face-to-face situation, and the immediate implementation of appropriate processes.

Multi-officer event management over Pronto enables the lead officer at an incident to see all attending officers' witness statements and notes taken at the scene of an incident, via device synchronisation. Before Pronto, officers would have to travel back to the station – which in this rural area could be many miles – to transfer the information into the force system to enable other team members to access it. The ability to see all information taken at the incident itself means conflicting witness statements can immediately be identified and challenged if necessary.

Officers will not be in stations at computers, they will be out and visible in our communities. Mobile digital policing is a key part of our wider Police and Crime Plan where we are changing the way we work in order to put the public first.

Chief Constable Simon Prince, Dyfed-Powys Police

What does it take to provide mission critical communications?

THIS ISSUE'S GUEST WRITER

KEITH TURNER OSTJ, QPM

The guest writer for this edition of Reach is Keith Turner. A native of Carmarthenshire, Keith initially trained as a secondary school teacher. However, following qualification he chose a career as a police officer and joined the Dyfed Powys Police in 1972, becoming Deputy Chief Constable in 1997. In 1999 Keith became the Chief Constable of Gwent Police.

Keith has held national roles for the Association of Chief Police Officers in the General Policing and Information Management Business Areas where he was Deputy Chair. Keith also led for the Police Service in the field of Information and Intelligence Sharing and Communications.

In 2002 he became a member of the Airwave Programme Board and very shortly afterwards became its Chair steering the PFI during the very successful Crest programme which accelerated the service roll out to forces.

Following Keith's retirement from the Police Service in 2004 he was invited by the Permanent Secretary at the Home Office to become a member of the Police Information and Technology Organisation (PITO) Review Team.

Keith has been Chair of the Dyfed Powys Probation Trust Board, Chair of the Wales Probation Chairs and Chiefs group and the Senior Responsible Owner (SRO) of the All Wales Probation Trust Project which successfully applied to merge the existing four boards into one Trust.

Keith now runs a consultancy business in partnership with his wife Isobel offering strategic and communications advice to organisations associated with the Police and Security Services.

In March 2012 Keith was appointed as a Non Executive to the Airwave Solutions Ltd. Board where his main responsibility is to present the customer perspective. He is now a senior advisor to the Board. Keith was Chair of the national police registered children's charity Child Victims of Crime until April 2011 and remains a Trustee.

Great Britain's emergency services are hierarchical organisations with well-developed command and control structures, policies and practices that have evolved over time and have been regularly tested as society and natural phenomena have made demands upon them.

The need to effectively communicate with their resources, deploy them, and receive reports on their availability and updates on incidents is perhaps more important today than it has ever been. This is due to increasingly demanding public expectation and a general reduction in human resources due to austerity measures.

The requirement to have effective communication systems has been highlighted in many historic public enquiries and reports in relation to major incidents and disasters whether natural or terrorist linked. Public expectation of the emergency services is being built to a certain extent by citizens own exposure to, and use, of sophisticated communications technology and regular close scrutiny of service delivery by the media.

With technology moving forward, and increasing demands on the emergency services, I pose the question 'what does it take to provide mission critical communications?' and examine the importance of getting it right.

In the past the emergency services had at their disposal the means to communicate with their personnel that ordinary citizens did not possess. However, this has changed dramatically since the advent of public mobile communication devices and most of our population now regularly use more than one such device.

It is naturally assumed that with new mobile technologies and capabilities the emergency services can do what the public do – immediately adopt new communications technologies in their daily work. It is a fact of life that this is not quite reality with emergency services communications, largely due to their 'emergency' role. The work our emergency services do every single day in the line of duty is unpredictable and full of risks. As such emergency services require a higher standard of communications and they need it instantly. Communications are mission critical for our emergency services.

It is easy to think simply that anything which is available for the public to use, such as new smart devices, commercial mobile broadband, and apps, can be used by emergency services. There is nothing to suggest

that this couldn't happen, but we must remember that emergency services requirements differ from public requirements in a very significant way so let's explore the reasons why.

Resilience & Coverage

Communications can be a lifeline for our emergency services and so network coverage can never be in question. Communications act as an enabler for our services in many ways for example: to summon urgent assistance, to communicate the events of an incident or to simply deploy resources to an incident. No matter what, communications MUST work wherever, whenever.

Knowing that communications are tried tested and reliable is paramount in mission critical communications along with devices which are robust and ruggedised. As a member of the public, if my mobile coverage is unavailable it is personally extremely frustrating. As a member of the emergency services, if I am out of coverage I might not be able to do my job and in an emergency situation if I can't do my job, something serious and life threatening could happen.

Security

Transport your mind back 13 years, and remember a time when emergency services communications could be eavesdropped. During this time information discussed by emergency services could be listened to by journalists, terrorists, criminals, not to mention Ham Radio operators – amateurs and enthusiasts.

With the types of information our emergency services communicate to one another, it is vital that any communications they have are completely secure, and those handling the communications do the utmost to uphold the integrity and confidentiality of data. Bear in mind recent security breaches from journalists, online data theft, hacking and phone hacking and you can understand why security still remains an important element of emergency services communications.

Responsiveness and Interoperability

A split second can make a world of difference for our emergency services. Responsiveness of communications for our emergency services is essential. Responsiveness can include a myriad of things:

- The ability for a communications provider to respond in extreme conditions to ensure communication is working throughout, no matter what. Maintaining service 24/ 7/ 365.
- A single button which, if pressed during an emergency, will over-ride communications and put you to the top of the list – facilitating emergency back-up being at your side within minutes. Trusting this emergency button to work every

time it is pressed, which currently is every six minutes in Great Britain.

- Knowing you can press a button and talk to many colleagues within a group.

Whether there is a major incident or a 'business as usual' occurrence, our emergency services work together on an ever increasing basis. Maintaining the ability to communicate seamlessly between emergency organisations is just the beginning of their unique needs. Collaborative working is essential not only for the services, but also for the supplier of communications. Making sure that all of the complex basics are in place to enable responsive interoperability is just the beginning of our emergency services needs and requirements.

This short analysis highlights the uniqueness of the communications needs of our emergency services. Needs which take significant design, preparation, time, and testing to address and provide.

A recent report by the American National Telecommunications Public Safety Council (NPSTC) on 22 May 2014 stipulates detailed guidance with requirements and recommendations that should be applied to their National Public Safety Broadband Network (NPSBN) and both existing and new terrestrial radio systems. Introducing the term 'Public Safety Grade' the report outlines very detailed specifications in order to mitigate the risk presented by environmental and manmade events as well as other threats to the network.

It includes sections on reliability and resilience, coverage, push to talk, performance, scalability and security, which contain best practice guidance that applies not only to the private NPSBN but also to any elements of commercial networks that may be used when shared facilities are utilised. This report provides evidence to support the importance of getting emergency services communications right, as well as showing what it takes to provide mission critical communications as we have examined earlier.

So what next for mission critical communications technology? As implied with the NPSTC report, with communications for emergency services being mission critical, the technology used should be scrutinised with appropriate standards applied to govern them.

With significant change on the horizon through the next technological step change to long term evolution (LTE) or 4G, emergency services will be able to utilise data capabilities and broadband functionality. LTE also has the potential low latency feature that most experts believe will, in time, deliver the fast call set up speeds that are required for the emergency services mission critical voice application.

The standards required for LTE to be used in the emergency service arena, particularly in relation to voice communication on 4G networks,

Examining these debates along with the needs of our continually evolving emergency services, has suggested the best way to move forward is with a solution that balances the mission critical benefits of a dedicated network and the cost advantages of a commercial service – a hybrid Network.

Extract from NPSTC report on public safety broadband

"Hurricane Sandy struck the East Coast of the USA in 2012 and all of the commercial wireless communications networks experienced varying degrees of outage. There were several 'lessons-learned' reports which showed that 20 per cent of all commercial wireless cell sites were out of commission, some for many weeks, leaving large areas without any form of cellular communications. The National Public Safety Broadband Network (NPSBN) must be built to Public Safety Grade (PSG) standards. It is generally recognised commercial broadband networks are designed as 'best effort' networks and are more prone to outages during both natural and human caused disasters, power outages, and other events. The NPSBN, as well as existing Land Mobile Radio (LMR) systems, must be able to withstand more severe natural and manmade disasters and must also be capable of being quickly repaired and/or quickly place into service temporary network components after one of these events.

"Today's public safety voice networks and existing LMR systems are built to higher resiliency standards than found in commercial provider installations. They are built to withstand natural and manmade incidents – these events typically correspond to high risk to life and property and are critical moments for public safety communications. They have more resilient systems and substantial communications redundancy. [...] it becomes paramount to 'harden' the NPSBN to achieve PSG service. Therefore, it is critical that public safety establish the requirements to harden the NPSBN to PSG – one that establishes a highly available service during all hazards and events."

The report defines PSG as a conceptual term that refers to the expectation of emergency response providers and practitioners that their equipment and systems will remain operational during and immediately following a major natural or manmade disaster on a local, regional, and nationwide basis. The term PSG in this document is used to refer to network hardening or network sustainability.

are currently in the development phase. These standards are vital and when they are available they will not only help to ensure the safety and security of capabilities, but also that savings in relation to economies of scale can be accessed. Whilst we endeavour to guide these standards for the future of emergency services communications, the best way forward currently for our emergency services is via a hybrid solution. What do I mean by a hybrid solution?

A subject of recent industry debate – white papers and reports consider the best way forward for mission critical communications. In Germany a recent government white paper concluded that a hybrid solution of TETRA for voice and LTE for data would be required for many years. Additionally, a recent US Congress report by the Congressional Research Service commented that their government funded 4G service would only carry data and video for some time and their equivalent of TETRA would still be required for mission critical voice.

Examining these debates along with the needs of our continually evolving emergency services, has suggested the best way to move forward is with a solution that balances the mission critical benefits of a dedicated network and the cost advantages of a commercial service – a hybrid Network. In the hybrid model the emergency services retain the benefit of secure mission critical voice until a standards compatible LTE voice capability has been shown to deliver to mission critical requirements. The dedicated element of the network provides a national resilient communications platform that covers the landmass of Great Britain, but also enables users to access commercial networks as operationally appropriate.

We can already see emergency service organisations trialling hybrid approaches in their communications today. For example, Hampshire Fire and Rescue Service (FRS) utilise Airwave's Emergency Services Network (ESN) for mission critical communications with the control room, whilst trialling the benefits of reliable broadband provided by Airwave's 4GMax.

This type of hybrid approach enables Hampshire FRS to support

and manage resources and equipment on-site at incidents by being able to access vital information such as building and site plans and risk assessment forms which are updated every 30 minutes.

Surrey Police have also seen the benefits of a hybrid approach whilst trialling 4GMax. Using reliable and secure broadband in a different way to Hampshire FRS, Surrey Police stream live video to their control room from its patrol cars, significantly enhancing the force's ability to perform risk assessments during pursuits and its overall command and control capability.

They also use it to enhance their Automatic Number Plate Recognition (ANPR) service and reduce the costs and improve reliability when compared to their previous method which involved satellite communications. North East Ambulance Service (NEAS) saw the benefits of supporting the whole incident lifecycle with this hybrid type approach. Using 4GMax, information on the patient's situation could be recorded and instantaneously sent to the receiving hospital.

A number of police forces are also transforming their processes by recording data, conducting searches at the scene of the incident rather than communicating back to the control room to conduct these, and producing reports at the scene of an incident through the use of Airwave's mobile data service, Pronto. The agile working environment created for emergency services through the ability to quickly send and receive large amounts of data whilst attending an incident, and maintaining mission critical communications provides a number of benefits that include increasing visibility of emergency services with the public as well as a reduction of time spent on recording and duplicating reports whilst increasing efficiency through reducing errors.

By exploring the capabilities and benefits of a hybrid approach today, these emergency services organisations are not only making the most of new technology faster than before, but are paving the way for LTE standards by trialling, testing and assuring communications in mission critical situations, while losing none of the critical features they have come to rely on today.


The safety of the people shall be the highest law.
Cicero
When lives are at risk there is no time for failure.
Great Britain's emergency services trust Airwave because we are there for them, supporting their front line response, whatever the time of day, whatever their need.
Successfully delivering the Emergency Services Network for over 13 years
Ensuring service is maintained in every situation
Prioritising all our emergency services customers because it is what we do, they are our only focus
Today, tomorrow, the future.
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