British Association of Public Safety Communications Officials

BRITISH APCO JOURNAL

Knowledge Exchange for Public Safety Communications

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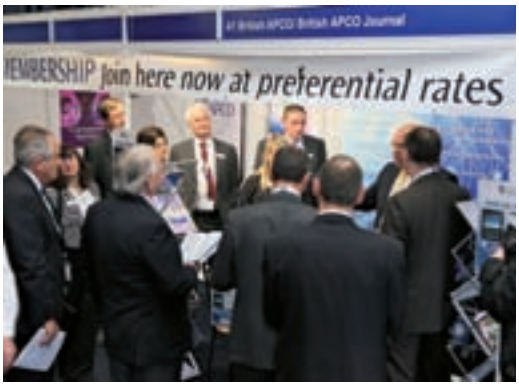

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BRITISH APCO
Knowledge Exchange for Public Safety Communications

British Association of Public Safety Communications Officials

British APCO is where active and advising members of our public safety community exchange and advise on all critical communications subjects. British APCO participates strongly in the Global Alliance of APCO Interational.
British APCO's aims include solving realtime critical communications problems, participating in research programmes (eg EU projects), showcasing technologies, and lobbying on issues such as spectrum and harmonisation.
British APCO holds an annual exhibition and development event, many regional events as well as training sessions, and is respected as the UK's (and Europe's) leading – and only – forum of knowledge exchange and transfer specific to communications in public safety.
To find out more details on how to contribute and draw from of this vibrant community, by becoming a member,
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British APCO: President's Address

Sue Lampard, President

I'm delighted to have taken over the Presidential role, although as a 'non-techie', I sometimes wonder how I ever came to be in this position! Suffice to say – I'm loving every minute of it!

Thankfully I've just retired from Surrey Police after 31 happy years, so it's enabling me to have more time to focus on the important areas for us to be involved with.

I believe this is one of the most exciting times in the history of British APCO. Those who were around 20 years ago may recall our involvement with the TETRA roll out (PSRCP). Now we're in to the next generation, with whatever ESMCP delivers. Our initial concerns about the programme led to a workshop at BAPCO 2013 and subsequent direct engagement with the ESMCP team. We're certainly reassured that they are on the right track to deliver both mission critical voice and enhanced data services, and believe that the UK could become the world leader in public safety communications (as was the case with TETRA). We have offered support to the team and in any event will maintain a watching brief to ensure that the public safety sector is served well by the new technology.

Our MAIT (Multi-Agency Information Transfer) work with the Cabinet Office (supported by JESIP) will hopefully start the UK down the part of true interoperability.

Work in other areas such as Next Generation 999, smart phone apps and public safety spectrum is also ongoing. We're getting great support from our members as I believe they're beginning to see some real benefits in being involved with British APCO. We're operating at the heart of public safety communications, where we should be.

Our next event in November (12-13) will host the CCS annual TSG Symposium. It will also provide opportunity to update members on all the areas of work we're involved in. Other areas such as body-worn video and telematics will be on the agenda, so it should be an interesting and varied programme to suit a wide range of attendees. Our main event will be back in Manchester (1-2 April 2014) and we want to showcase the UK as a world leader in public safety communications. We have some ideas of how we might do this in a different way – so get involved if you want to be at the heart of it! We'll also be starting our first British APCO awards to be presented at the Gala Dinner on April 1st (nothing intentional here!). We're looking for sponsors and likely candidates who can be recommended to receive them.

If you're not already actively involved with British APCO activities – we need you to be! If you can spare the time we'd love your expertise and support!

Commercial Advisory Group (CAG)

Simon Land, CAG Chairman

Last year I took on Chair of the Commercial Advisory Group to revitalise its role in British APCO. I also took on chair of the Commercial Group MAIT project team. I now find that it was too much to do both and I am hoping to be handing the Commercial Group Chair to Graeme Hobbs in the near future, who is considering continuing with the work the group started. My thanks go to the other members in the group that have supported me.

The commercial group is a vital part of British APCO. It is where the product knowledge sits that will allow the public safety services to make the changes that are necessary for the future. Bringing the user base knowledge and the industry's product knowledge together will inevitably produce more efficient and useful systems. That is part of the vision I have for the Commercial Group within British APCO. The vision also has elements of accredited training for both users and suppliers that would enhance the CVs and employability of both. Being a member of a professional body is regarded positively by employers, and British APCO is perfectly placed to be that body within the public safety services and supplier industry. I hope you, the commercial members, will support the Chair in his new role and provide him with what you can give to and require from British APCO.

BRITISH APCO

Knowledge Exchange for Public Safety Communications

Being a member is now even more critical: help campaign for dedicated spectrum for UK public safety and protect our requirements for mission critical voice over 4G/LTE.

As I've said previously, this is a pivotal moment in communications for Public Safety. British APCO recently invited a vocal and passionate group to join a day's workshop on the spectrum debate. (A short position on 4G/LTE and ESMCP follows – the key here is to separate this from spectrum as a topic). We received a mandate from all assembled to lead the campaign for dedicated and harmonised spectrum.

4G/LTE has to flow over someone's network at a specific allocated spectrum. Clearly, with some binding contract in place, commercial providers of 4G/LTE can support transmission of MCV and data services for public safety. The concerns are inevitably around the conflicting priorities represented by commercial mobile network provision for the public and business versus the needs of public safety, especially in times of crisis when load can increase rapidly. Also, the rate at which non-voice functions become deemed critical is difficult to predict.

The best approach is for spectrum to be allocated specifically for public safety. Where a theoretical throughput in the worst crisis possible can be calculated, and there may be 'unused' throughput (not the same as unused spectrum) this can be made available to a commercial network (reviewed regularly, as growth will change the ratios) for their own business use. The concept allows commercial providers to invest in the infrastructure to support traffic flow at the allocated spectrum, and benefit from the unused capacity within the model just described. This is an attempt to précis a huge subject into my little column! Key is that we must demand dedicated spectrum to meet our needs, 2 X 10MHz.

The second part of the campaign is that the allocation of this spectrum is harmonised with the other allocations, worldwide, of public safety spectrum. This is generally agreed as being in the 700MHz band. Slots in this band are being prepared for auction (abbreviated for this column) right now, and we must ensure that our Government recognises the need to allocate public safety spectrum in this harmonised band.

The main benefits of this are evident; firstly equipment worldwide operates in the same band (700), and secondly (more importantly) the cost of handsets and equipment for public safety will be massively lower if the same chipsets are used worldwide.

This is a huge campaign we need to spearhead. We are bringing along the agreement from FCS, TCCA and RUSI when we speak for our entire public safety community. We have to campaign up through key public figures who understand our needs and into the very heart of Government. We must involve our peers worldwide, most especially drawing down on support from the US, where FirstNet is now commencing work rolling out a nationwide 4G/LTE network, fuelled by the commercial network providers' partnerships (as I described earlier), in dedicated 2 X 10MHz in the 700MHz Band. This was only achieved after exhaustive campaigning, led by APCO in the US, and I have just been given commitments by some of the dignitaries involved that they will come and add their voice at the right moment.

This is a massive challenge – it is at the very heart of our public safety needs. It is going to be expensive, and your membership and participation will be needed to succeed. We are your voice, but we need your membership and support.

Watch for the next event in this work, planned for 2nd October, London. This will be followed by activities at our Autumn Event 12-13th November, Windsor. These will be announced more fully in the eBulletin (sign up at www.bapcojournal.com) and online.

Requirements for mission-critical voice over 4G/LTE

We participated in the Home Office ESMCP session that announced, at our April Annual Event in Manchester, that the new platform for public safety mission-critical communications is 4G/LTE. This involves ceasing to renew Airwave TETRA contracts, area by area as they expire, and a consequent migration to new technology.

The concerns about how this will support mission critical voice are beginning to be understood, in no small part thanks to our efforts to ensure that the requirements as we genuinely understand them (and many don't!) are consistently applied in the provision.

The Home Office started a pre-procurement engagement and British APCO were the only independent people present, along with 170+ commercial suppliers under strict NDA. Our task is to remain vigilant on MCV especially, including being advisory and the friendly voice of reason, as this process trundles along.

Dates seem to be more realistic now. Whether it's the stated target of 2016, or 2018, or even 2020, is unimportant; the key factor is does MCV work, as it is needed to, in order to continue to save lives and protect public safety professionals?

We are maintaining a close relationship with ESMCP and the Home Office to ensure our voice is heard. This and the related activity, across our stakeholders and the government departments, is expensive and critical – the message is the same – we need your membership because it helps meet these costs, and most importantly, it adds your voice to our insistent demand that MCV continues to support the 4 Cs of its requirements.

Tony Antoniou, Executive Director.

Lynx to deliver Ka on your back

Project Lynx will next year result in a mobile Ka-band satellite terminal that is so light you can even carry it in a rucksack on your back – and its modular nature means it can be integrated with local 3G,WiFi and even TETRA networks.

The benefits of such a system are clear cut both from a public safety and a news gathering perspective – two key markets for this type of technology. Users will be able to carry the terminal to any remote location and set up a 2-way satellite link as well as a 3G network using a fully integrated Femtocell module (effectively, a small 3G base-station). And because the satellite system being used is Ka-band, the link will easily carry high quality video streaming as well as broadband and voice communications.

The Lynx consortium comprises five partners, each contributing their own expertise to a project that is partly funded by the Technology Strategy Board, the UK's innovation agency. Established by the Government and funded by the Department for Business, Innovation and Skills, its role is to stimulate innovation to accelerate economic growth.

The partners of Project Lynx are British APCO, Avanti Communications, Alcatel Lucent, Cobham, and Nottingham Scientific Ltd. Avanti Communications consultancy group is co-ordinating the Project and providing the Ka-band satellite capacity from its HYLAS fleet. Cobham is building the satellite terminal, Alcatel Lucent is working on the 3G Femtocell unit, while Nottingham Scientific Ltd is delivering a separate module that will provide a reliable and robust Global Navigation Satellite System (GNSS). British APCO's role, coordinated by Jim Strother, has been to provide independent user requirements with the help of its membership.

Mobile satellite units are not new, of course, but portable units tend to use lower frequency bands. There is no current lightweight solution that uses Ka-band and incorporates a 3G capability, making it suitable for both public safety and news-gathering sectors.

It will be possible to carry the terminal in a rucksack and for it to be taken on a plane as cabin luggage. Adrian Payne, Head of Satcom and Wireless Products at Cobham Technical Services, explained some of the challenges this involved. 'Most commercially available units use reflector antennas – satellite dishes – which sometimes come in several pieces which have to be assembled. This type of unit can be quite heavy and bulky and is not easy to deploy. Our terminal will not have a separate reflector antenna, but instead will use a single piece flat panel antenna that requires no assembly. Instead of taking 10 or 20 minutes to get on satellite, users will be able to set up the terminal in a few minutes. In addition, other terminals don't have integrated Femtocell or GNSS modules.'

The graphical user interface has also been designed (with the help of British APCO) to ensure that the terminal is as easy to use as possible. The unit displays a simple set of instructions that require no prior technical knowledge, which means that literally anybody could use it.

During the course of B-APCO's user requirements research, it was (perhaps predictably) ascertained that, for public safety users, voice is – at least initially at an incident – the most important feature, and in the UK this means TETRA. 'One of the things you can do with this terminal, subject to commercial and legal conditions, is to attach a TETRA base unit,' clarifies Jim Strother, adding that, although this type of capability is not necessarily new, it is as part of a Ka-Band system.

A 'fail safe' data back-up solution will also be included in the package, so if, for whatever reason, the terminal fails to link with a satellite (eg satellite line-of-sight is hindered) data can be stored locally on the terminal until access is restored.

According to Cobham's Adrian Payne the first units could be ready for testing early next year. This is when British APCO will again step in, says Jim Strother. 'Although we do have a user group, I would encourage emergency services personnel that would like to get involved in testing to get in touch. We believe public safety would be enhanced by technology such as this.'

As for the demand for this type of technology in the public safety arena, Jim Strother acknowledges that much depends on the ESMCP (Emergency Services Mobile Communications Programme) and how data services will be provided and used in the UK. Fixed data networks, however, can break down or fail in large-scale incidents, which is when the ability to rapidly deploy broadband communications could be essential.

In the UK there is already the High Integrity Telecommunications System (HITS), a resilient communications backbone between crisis management centres across the UK and which includes three transportable satellite terminals.

However, HITS is primarily for local government. 'Ideally every public safety organisation would have access to a portable satellite terminal for emergencies, but we know this may be financially difficult. However, a sharing system could be put in place or, potentially, the data network supplier would provide the terminals for emergencies.'

For situations where all local communications have broken down – i.e. no 3G, TETRA etc – Cobham is currently developing an ad-hoc mesh radio routed over satellite for first responders. The low cost custom Mobile Ad-hoc mesh NETwork (MANET) is made up of handheld radios, data terminals, deployable repeater nodes and a custom IP-based satellite gateway unit that will interface with the Project Lynx hardware. The MANET will enable local full duplex PMR voice and data services to be used in disaster situations, in areas where existing communications have been disrupted, with a link via satellite to headquarters anywhere in the world, says Adrian. 'In the case of underground communications, responders entering a tunnel can use the radios as repeaters, and can drop extra repeater nodes along the way, to link to those outside, and to anyone else in the world via the satellite terminal.'

Avanti Communications Ka-Band Satellite HYLAS 1.

If all goes to plan, by the time Project Lynx ends in September 2014, there will be a new state-of-the-art ruggedised (IP65) portable Ka-band satellite terminal that could play an important role in public safety – and British APCO will have played a part in its inception.

Multi-agency interoperability in the Isle of Wight

Hot on the heels of Exercise 'Alcourse' at Southampton Eastleigh Airport is Exercise 'Gilligan's Island' - a multi-agency exercise to be held on the Isle of Wight over the weekend of 21-22 September, writes Mike Batten, Roads Policing Officer and Hazmat Advisor, Hampshire Police.

Following the involvement of the Isle of Wight Fire and Rescue Service (IOWFRS) in Exercise 'Shannon' (Fawley Refinery) in May 2012, the Chief Officer Steve Apter, and personnel of the IOWFRS approached HFRS to discuss the feasibility of staging a similarly complex exercise on the IOW.

This was to include several agencies to – once again – test interoperability between the services and, in particular, test the ability of Hampshire Fire and Rescue and other Brigades to reinforce deployed IOWFRS resources and test the viability of the logistical plan put in place for such an event.

Several months on and planning for the exercise (at the time of writing) is well advanced and all the key players are integrated into the scenario. Obviously we cannot disclose exactly what the scenario involves, but what we can say is that it will be another major test of the ability of the 'blue light' and Category 2 responders, as well as civilian agencies, to come together to provide an effective response as the 'incident' unfolds.

Having said that, it does not compromise confidentiality to state that, by virtue of the IOW being an island, one of the keys to the success of the exercise will be the ability of participants to effectively mobilise, deploy and then manage a broad range of assets from the mainland to the Island, which will include a ferry crossing of the Solent.

The IOW is served by two ferry operators, Red Funnel and Wight Link, who provide an hourly return service throughout the year from terminals at Southampton and Portsmouth. Holding the exercise at the end of the summer season will hopefully offset some of the issues that would arise should Mr and Mrs Public find their ferry commandeered by the emergency services and their holiday disrupted. However, the significance (and media impact) of such an eventuality is very much in the minds of the planners. Our thanks go out in advance to both Wight Link and Red Funnel who have worked very hard within the planning team and if all goes well on the day, it will be in no small part due to their unstinting efforts.

It is anticipated that a full report of the exercise will appear in the November issue of British APCO Journal where we will (hopefully!) not only be celebrating success, but also building on the lessons learned and incorporating them into future emergency planning.

FIRECONTROL UPDATED

The House of Commons Committee of Public Accounts has said there is a 'lack of clarity' over the national resilience that will be delivered by independent fire local authorities and has 'serious concerns' over their procurement skills. The Committee has voiced serious concerns that there are insufficient skills across all fire authorities to ensure that 22 separate local projects can be procured and delivered efficiently.

In its recommendations, the Committee has tasked DCLG to set out how the new approach will achieve the required fire and rescue authority interoperability and resilience to meet national demand given the variability of local engagement and collaboration across the sector.

CFOA has released a statement in reaction to the Public Accounts' report saying that the accusation that FRAs lacked procurement skills was 'unjustified' and lacked evidence. It has also pointed out that of the 22 Improvement projects underway, 14 have undertaken the process of procuring new mobilising systems and of those 12 have now signed contracts. In addition, CFOA emphasised that the development of a national solution was not one of the required components within the business case requested from FRAs by DCLG.

New mobile command vehicles from Excelerate

Bedfordshire Fire and Rescue Service and Devon and Somerset Fire and Rescue Service have chosen Excelerate Technology communications solutions for new mobile command vehicles.

Excelerate Technology Group will supply, integrate and support advanced communications solutions and services for a new incident command vehicle for Bedfordshire FRS.

Wayne Stringer, Technical Support Manager at Bedfordshire Fire and Rescue Service, who has chaired the working group dealing with incident command and defining the requirements for the new command vehicle, said that the key driver for the vehicle was based around interoperability and the ability to display a variety of relevant information to the large screen in the briefing area. The vehicle will be based on a Mercedes long wheelbase, high roof chassis and will have the full range of communications solutions provided by Excelerate Technology Group, including wireless dual thermal rapid response and body-worn; the Digital Dashboard Management Interface (DDMI); and MESH communications capability, which will extend and enhance wireless coverage across incident grounds.

The new mobile command vehicle is due to be delivered to the Service around September 2013.

Devon and Somerset FRS's tender for three new command vehicles was issued earlier this year and awarded to Browns Coachworks Ltd of Northern Ireland – with Excelerate Technology Group chosen as communications solutions supplier. The acquisition follows a successful earlier procurement of major communications upgrades for an Enhanced Logistical Support vehicle prior to the 2012 Olympics.

After acceptance testing and training the new mobile command vehicles are expected to go on the run by the end of 2013.

The future of the force

AIMTech Consulting, a spin-off from the University of Leeds Business School, has released major new report, *The Future of the Force: Police, Technology and Serving the Public*.

The report, commissioned by Airwave, explores the changing nature of policing and the opportunities for technology to help forces drive efficiencies, free officers from back office tasks, and deliver a higher quality service. The first part of the report builds upon the results of a national survey completed by more than half of all UK police forces.

The survey looks at the state of police technology today and expected areas for development. These include evolving sources of information such as social media (81%), and evolving ways of making information available to officers on the beat – through smartphones (90%), laptops (71%) and in-car terminals (67%).

The second part of the report builds upon interviews with senior officers and chief technology officers of companies supporting the police service.

It highlights changes in the nature of policing and resulting technology challenges, including: a major increase in big data and the need to filter and analyse growing volumes of structured and unstructured information to convert this into real-time intelligence; and a rise in the need for collaboration and interoperability of systems so that information can be shared both between forces and/or with other emergency services.

The final section of the report explores the potential for emerging technologies such as sensors and augmented reality as well as ethical issues relating to their use.

ICT spend forecast

Police estates renewal will generate an ICT spend of at least £28m in England and Wales over the next three years. A total estates spend of £700m is planned over the period, which will also create demand in excess of £20m for CCTV; secure access and audio visual technology, according to specialist monthly bulletin Police Market Report (www.policemarketreport.co.uk).

The bulk of the spend will be absorbed by five new Headquarters; a series of divisional HQ renewals and at least seven sets of new custody facilities. There are three major control room renewals planned or underway.

Works are largely spread between 10 forces, each of which will spend more than £10m on estates in 2013-14. This level of investment will be sustained by six forces the following year. ICT spend forecasts are based on a review of completed schemes from the previous three financial years. It found ICT generally accounts for between 3 to 5% of total budget, but can be around 33% to 40% in the case of communications centres. A further 2% is taken by CCTV; access security and audio visual, although this can be significantly higher in purpose built custody facilities. The study excludes the planned £140m Desertcreat training facility in Northern Ireland and the Gartcosh Crime Campus in Scotland. The new generation of large police buildings are expected to support mobile working. Greater Manchester Police have adopted this model and invested £700k in network technology to support agile working at their new £64m HQ.

The cost of losing Airwave radios

METROPOLITAN POLICE TOTAL POLICING

Calendar Year	Number of Airwave Radio Losses	Cost of lost Airwave Radios (per radio)
2006	8	£481.75
2007	192	£481.75
2008	160	£481.75
2009	200	£481.75
2010	252	£343.38
2011	992 (694 bulk audit in November 2011)	£343.38
2012	321	£343.38

According to the Directorate of Information at the Metropolitan Police, 2,125 Airwave radios have been lost, stolen or are unaccounted for, since 2006.

An audit in November 2011 revealed a staggering 694 lost radios, which brought the total for the year to 992. According to *Airwave Radio – Standard Operating Procedure*, lost/stolen/unaccounted radios must be reported 'without delay', to ensure the Airwave infrastructure is not compromised and to maintain the security of the information.

In cases where the radio is believed to have fallen into criminal hands, the radio can be disabled immediately via the Managed Radio Services Help Desk. According to procedure, attempts to trace the terminal should take no more than one hour before it is disabled.

As for accounting, the SOP explicitly states that every Airwave radio terminal is an accountable item and as such the Local Terminal Custodian must know its whereabouts and who is responsible for it.

Accurate jamming detection

The CTL-3520 handheld GPS jamming detector and locator system has been introduced by Chronos Technology – and it is aimed specifically at detecting GPS jammers hidden in vehicles.

The unit can pinpoint even the weakest jammer and identify the vehicle in which the jammer is hidden, even in a busy multi-storey car park.

Other applications include detecting vehicles with jammers at ports, fleet depots, airport car parks and taxi ranks.

The CTL-3520 device was recently tested by representatives of law enforcement and security agencies in screened rooms at the MIRA test facility in Warwickshire and successfully identified hidden jammers both in vehicles and people's pockets.

The CTL-3520 was developed from research undertaken by the University of Bath and is a significant commercial outcome of the SENTINEL research project which was part-funded by the Technology Strategy Board.

Commenting on the unit Prof. Charles Curry said: 'Previous jamming detecting products have been unable to identify which vehicle is hosting the jammer. This has been a particular limitation and a major challenge for people wishing to protect critical infrastructure if faced with GPS jamming emanating from a nearby vehicle.

'Most websites currently selling GPS jammers maintain that the operating distance of a jammer is just a few meters. This is simply not true. We have tested GPS jammers in controlled trials and their range is easily 250/300 meters which makes specific vehicle identification extremely difficult, particularly in a multi-storey car park.' He continued, 'The CTL-3520 solves this problem and can pick out one vehicle in a thousand which has the jammer installed.'

NEWS IN BRIEF

Airwave has been awarded the contract to supply an integrated communication and mobilisation solution to County Durham and Darlington Fire and Rescue Authority (DDFRA). Airwave will deliver the control room solution working with APD and 3tc Software. The duration of the contract is three years and is valued at an estimated £2m.

Metropolitan Police Service has selected Northrop Grumman CommandPoint application as the core solution for its new command and control requirements. The new command and control system is planned to go live in October 2015.

Wiltshire, Hampshire, Dorset & Devon and Somerset Fire and Rescue Services have selected Capita for an innovative collaborative approach. The Networked Fire Control Services Partnership (NFCSP) serves a population in excess of five million people and is expected to improve the resilience of all four fire and rescue services whilst delivering cost savings. The new system will also enhance the services' existing control centre functionality.

NHS Glasgow and Clyde has awarded a critical communications tender to Multitone. The project will deliver a central critical communications system for the Trust using the IP-based i-Message product. The project is a key part of the Trust's new Southern General Hospital, which is scheduled to open in 2015.

South Wales Police has consolidated all call handling to a single public service centre which now handles both non-emergency and emergency calls. The centre is already generating internal cost savings on South Wales Police's entire voice estate and its contact centre estate. Siemens Enterprise Communications' OpenScape Contact Center and the underlying OpenScape Voice technology ensures that all calls are handled effectively by a single scalable core platform.

IIR has launched Critical Communications Middle East Congress and Exhibition, which will take place 15-17 September 2013 at the JW Marriott Marquis, Dubai. IIR , who is the organiser of Critical Communications World (previously TETRA World Congress), says that the event will cover the key technology options for mission critical communications users, including TETRA and LTE.

A masterclass in multi-agency cooperation

How interagency communications sessions have benefitted Surrey's public safety services.

Airwave's End User Engagement (EUE) team has a mission to help users make the most of the Airwave Service. The team aims to encourage users to ask as many questions as they need to ensure full understanding of the feature and benefits, and also to make Airwave aware of opportunities to enhance the user experience.

Because the EUE team visits user premises, the sessions are usually single agency only. However, when Surrey Police invited the team to work with their users, the programme became a master class in multi-agency co-operation.

Surrey Police has very close working relationships with Surrey Fire and Rescue Service, the South East Coast Ambulance Service (SECAMB), local authorities and the Highways Agency. The EUE was designed to include users from all these organisations.

Sessions were run at various locations across the county over a three week period and users from all agencies were encouraged to discuss their queries and opinions – not only on the Airwave Service but also on the use of mobile data terminals and PDAs supplied by Kelvin Connect, the Airwave company that provides the devices and capabilities such as stop and search. Surrey Police provided additional support and expertise from their Force Control room and their Airwave 'Super-User' team – user experts who pass on their knowledge and expertise. They are the point of contact for issues raised by users within their organisation.

The EUE initiative was instigated by Superintendent Sue Lampard of Surrey Police. Sue is also Vice President of British APCO (Association of Public-Safety Communications Officials), and knowledge exchange for public safety communications is at the heart of BAPCO's activities. Sue is also chair of the Telecommunications Sub-Group (TSG) for Surrey Local Resilience Forum. 'We had talked about the EUE within Surrey Police,' explained Sue, 'but with my TSG hat on, we brought all the agencies together for the sessions. This meant that users from different organisations who work together could see how they could make the most of the Airwave Service as an inter-agency tool as well as within their own agencies. The use of different sites for the sessions worked well too, as it enabled users to see how and where their colleagues worked on a day to day basis, rather than only meeting them during incidents or major events.'

"For Surrey Police the EUE is a key part of a wider programme of ensuring that our users are fully aware of Airwave's capabilities."

The Control Room in the Hindhead Tunnel proved popular, as did the Ambulance Station at Chertsey, a 'make ready' site where ambulances are prepared by a dedicated team of specialists who clean, restock and check the vehicles and equipment. The EUE sessions were designed to include shift workers, with drop-in sessions during evenings and weekends, as well as during 'normal' office hours.

Users sought information from the EUE team and other specialists on a range of topics, from refresher training courses for officers returning from a career break or from non-operational roles, to battery life expectancy. There were many questions too for Kelvin Connect staff, as mobile data terminals become more widely utilised by Surrey Police.

The multi-agency involvement meant that users were able to benefit from an inside view on the work of different public safety services, and discuss communications with people with different skill sets and a range of responsibilities.

The learning process is two-way, as the programme gave Airwave and Kelvin Connect a complete view of what's happening in Surrey, how the Service is being used, and the opportunity to discuss issues first hand with multi-agency participants. 'The programme gave us good insight to some of the challenges faced by officers whilst carrying out their job, and just how vital it is to rely on Airwave communications being there, whenever and wherever needed – not only for Police officers, but also other blue-light users as well. We've had some really positive feedback and suggestions where further improvements can be made. Overall it was a great collaborative effort by all involved working to help our customers get the best from their communication system,' said Richard Parkinson, Airwave Service Relationship Manager for Surrey Police.

Sue Lampard sums up the benefits: 'With more than 300 users visiting the sessions, the EUE was a valuable exercise in engaging all agencies, and exchanging information face to face in an informal setting. I think people went away with more confidence in how they use the Airwave Service, and that confidence is spreading within the agencies as the knowledge is shared between colleagues. We also had good support from senior officers, which encouraged attendance!

'For Surrey Police, the EUE is a key part of a wider programme of ensuring that our users are fully aware of Airwave's capabilities, that our training is timely and comprehensive, and that we use the Service in the most cost-effective manner. We're never going to be perfect, but we can always keep improving.'

Future user communication requirements for the emergency services

This is a critical time for the emergency services as choices are laid around LTE, TETRA and data requirements for the future, said Past President Ian Readhead, introducing a key seminar within a conference that successfully encapsulated all the comms issues of the present.

Commander Richard Morris, Metropolitan Police, ACPO lead on information management & communications, as well as business change lead for the Emergency Services Mobile Communications Programme, explained how this conference offered an opportunity to suppliers to give their vision of the future. The session was to complement an earlier slot that provided a detailed structure of the ESMCP as well as the approach being taken by government and end users. 'So today we will hear from suppliers their views on the challenges ahead, flagging up areas which ESMCP may need to look at.'

Following a brief overview of some of the key capabilities ESMCP was looking to solve, Commander Morris introduced Steve Littleton, a late addition to the panel, to comment on the high-level user requirements and the timetable for ESMCP.

ESMCP – timetable

The program's strategic outline business case was approved at the end of 2012. The first Airwave contract expires September 2016 with the rest following until the end of 2020. The ESMCP is aiming to have something in place before the first contract expires and the solution will cover the whole of the UK across government departments. Currently the members are working on an outline for the business case, which will lead to approval to go to market. The business case will include the approach to the transition timeline and – naturally – the potential solutions. 'We are working with the emergency services to enhance their teams so that we have more user expertise to help us in critical areas where support is needed. The Program can't be successful without outside help,' said Mr Littleton.

Requirements – what the end users want

Liz Baker from Cassidian shared with the audience the results of research carried out with around a third of all emergency services Airwave users, regarding communications. 'We asked people how they were with current public safety network communications, and how the Airwave network was doing in the general provision of the service.' Some of the adjectives used to describe the service included 'cracking', 'dependable', 'stable', 'resilient', 'reliable', 'brilliant', and 'good voice quality'.

Non significant problems that were mentioned revolved around data capacity, interoperability, talk groups, network failure concerns and terminal management.

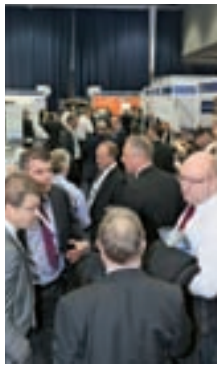
More significant issues concerned how the contract was being managed and led. 'There was unhappiness with the contract construct rather than the service. A little bit of suspicion also around the complexity of the contract – and there was the implication that the charging mechanisms had an impact on operational policing, and not necessarily the right impacts.'

Looking to the future, everybody said that they didn't want to lose what they currently had in terms of coverage, capacity, reliability, and resilience.

A quarter of the people said they wanted better transfer of data. 35% said they could 'do with smarter terminals'. A fifth cited improved integration with control rooms. 'Not many people talked about technology – they were focussing instead on what was required.'

Ms Baker focussed on the difficulty of constructing a meaningful, harmonised view on data due to the many and varied opinions across the emergency services. A number of data pilots were reported to be up and running but 30% of responders cited that, once finished, the pilots were closed, which suggested that data take-up was not very successful. 'And nobody said they would be expanding their data pilots beyond the pilot time frame. So work needs to be done in the data environment to bring it up to speed, particularly as

Over 1,000 visitors attended the B-APCO 2013 exhibition, while conference delegates numbered approximately 500.



regards policing. We believe that the harmonisation of data applications across police forces, enabling the sharing of data, will help drive take up and that is just as important as providing additional capacity.'

"We are building a network together which will allow us to have 95% 4G indoor coverage by the end of 2015."

Commercial networks are being used with 80% of responders utilising them primarily for voice – data being quite limited. Fire and ambulance use more data but there are still many different systems and approaches, requiring a multi-layered approach with multi-bearer terminals. 'Bearing this in mind and all the work needed to bring data to life in the emergency services, what is our vision for the future?'

Cassidian's view is tempered by its experience in other markets, where it is actively engaged in managing the transition from TETRA to LTE in a smooth migration path. TETRA still has a strong role to play in providing mission critical voice communications during the transition period. 'There are ways to do this which are both cost effective, and allow you to manage voice and data subscribers together even if communications are routed over different networks. We are working on terminals that carry both LTE and TETRA in the short term, as well as implementing sensible migration strategies for LTE. Our vision is we can do a lot with data using available networks in the short term, moving mission critical voice onto LTE steadily as the complete ecosystem becomes available and the technology is proven.'

The future is LTE

'I see the future as being LTE, the question is "when"', stated Euros Evans of Airwave, going on to explain why. 'The big difference is quite simple – and it has nothing to do with bandwidth. The reason LTE is important is it is low latency. The time it takes to send a piece of data across the LTE network is much faster than anything else ever before other than TETRA. And that is what allows you to have high speed call set up and move data across the network. It is that future promise.'

It is key that emergency services think about what has to be done today to make LTE available for emergency services. Some of these requirements are being addressed by the LTE-standards setting body, the 3rd Generation Partnership Project, in its Release 12 work. Other requirements will be addressed in later releases. 'But it is imperative to be crystal clear on your requirements, because this will define how it is available in the future. This is not technology looking for an answer. Your requirements are fundamental so you have to have your voice heard.'

The definition of what is 'mission critical' should also be addressed. The USA is currently rolling out LTE, but at the same time they are also rolling out P25 (the equivalent of TETRA). 'The last thing you want is to discover you have mission critical applications but you don't have a mission critical bearer to carry them. Equally you don't want to find yourself with a mission critical bearer and then stick your hand in your pocket and say, "Right, what am I going to do with this?"'

Applications are fundamental because they will dictate the user experience. 'There is no point having a super-fast bearer if you don't' have the applications and business processes management.'

ES LTE by 2015?

Beacon is a joint project undertaken by Vodafone and O2 that will entail the sharing of masts, explained Simon Holmyard of Vodafone. The result will be 18,500 masts working in 2G, 3G, and 4G, to be deployed by end of play 2015. As new technologies are deployed they will be migrated onto the shared grid.

James Norris of O2 added that although they believed a 4G solution could be delivered by 2020 to the emergency services, some key points would need to be addressed before then, including standards, vendor capabilities, user requirements, and guidance from industry.

'What we are talking about is one grid, one set of antennas, with separate backhaul and separate sales teams etc. We are building a network together which will allow us to have 95% 4G indoor coverage by the end of 2015. O2 holds a licence for 800MgH spectrum, which stipulates it has to be in place by 2017. By partnering with Vodafone we can do it two years sooner.'

Steve acknowledged that resilience would be one of the questions that would arise around this network. 'So I think the request to the Home Office – who are driving the user requirements – needs to be along the lines of national roaming. You can roam when you go abroad, but you can't roam in this country. So, national roaming we think is a key requirement for any 4G solution that we would deliver.'

So many questions

Intrigued by the prospect of an LTE network by 2016, a delegate sought clarity on the geographic cover of such a network across the UK. No exact figure could be given by the Beacon partners, but it was emphasised that there was a commitment to 95% indoor coverage of the population, as per requirements by the regulator Ofcom.

Tony Antoniou, Chief Executive of British APCO, questioned how quality of service (ie the prioritisation of emergency services comms over consumer needs) could be underpinned by law. 'We would rely very heavily on this as blue lights, to prioritise our needs over others in the event of an incident.'

One of the panel members pointed out that pre-emption

was in Release 12, and that it was down to vendors to 'pick on those hooks'. 'If we build a big brother of MTPAS, and control who has access to the network when something does happen, is an idea going forward. So if we put that in the global standard, vendors will go back to that.'

Euros Evans added that the impact on the consumers would also need to be considered – whether good or bad as experienced during the civil unrest. 'QoS runs deeper than prioritisation. We've spoken about national resilience but if you have a large-scale power outage then national roaming is not going to be of much help, unless you have standby power. If you turn up to London on New Year's Eve, the fact that I can chose my network is irrelevant. When you have periods of huge congestion you can apply QoS but it will be to the detriment of someone else.'

Another delegate expressed confusion regarding LTE timescales. 'I hear defining the standards there is a lot of work to do, and years before LTE for the emergency services is defined. Yet here I am hearing a network can be rolled out in 2015. It seems premature.'

Simon from O2 said that with Release due to be approved by the end of 2014 there would be the platform to implement push to talk and direct mode functions, and by the end of 2015 there would be a fully deployed national 4G network which could support the emergency services.

WHAT IS 3GPP?

The 3rd Generation Partnership Project (3GPP) was created in December 1998 and it unites telecommunications standard development organisations (ARIB, ATIS, CCSA, ETSI, TTA, TTC), providing a stable environment to produce the reports and specifications that define 3GPP technologies.

The Four Technical Specification Groups (TSG) in 3GPP are Radio Access Networks (RAN), Service & Systems Aspects (SA), Core Network & Terminals (CT) and GSM EDGE Radio Access Networks (GERAN).

The original scope of 3GPP (1998) was to produce technical specifications and technical reports for a 3G Mobile System based on evolved GSM core networks and the radio access technologies that they support.

The scope was subsequently amended to include the maintenance and development of the Global System for Mobile communication (GSM) technical specifications and technical reports including evolved radio access technologies (eg GPRS).

Since the completion of the first LTE and the Evolved Packet Core specifications, 3GPP has become the focal point for mobile systems beyond 3G.

Time to pull it out

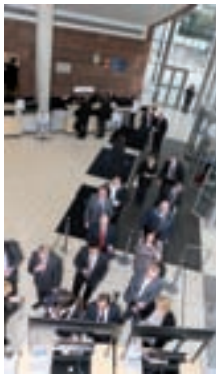
Apps and sophisticated comms solutions continue to grow in the mainstream but the blue lights persevere with voice-only technology for emergency calls, begging the question – who will take the lead on the issue of Next Generation 999 and eCall? Highlights from the Next Generation 999 session.

"In the UK our Government departments have not signed up to eCall, ensured mobile networks can carry it, or indicated whether BT will need to support this – which is odd considering the time scales."

'Completely ridiculous' is how Sue Lampard described the lack of work that has been applied to such a vital link of the emergency services chain, following an inspiring description of the current situation by John Medland of BT. 'Those of us in the emergency services need to decide what the 21CN emergency services will look like. At the moment it will be voice forever. But if people want to change that then we need to start thinking about how to change it and when.'

The big question is of course would this kind of capability improve things for the emergency services. Some years ago John Medland posed such a question to members of CFOA and the Ambulance Association and the answer was positive with many examples of such situations.

Not only is the potential benefit of such capabilities a great driver but so is public expectation. 'We've seen evidence that teenagers expect to SMS the emergency services. What we have now requires registration, and people are also probably very frustrated or disappointed that they cannot send you a picture of what they are trying to describe.' Managing the public's expectation for this type of service as well as its transition wouldn't be easy. 'You can't suddenly switch from what you have now to an IP-based service, but at some point the decision has to be taken. The question is, can we manage it before it is forced upon us by public expectation?'



The good news is that such a transition wouldn't involve starting from scratch. In the US much work has been carried out by the National Emergency Number Association. In Europe the European Emergency Number Association (EENA) is working on such a transition, describing the infrastructure that would be required by a Next Generation IP-based 999 system and how it would be used by the emergency services – all using technical standards already in existence. 'But in the UK we are not heavily involved and we do need to get involved, I believe, to ensure our voices are heard and the service is useful in a UK context.'

Pieces of the vision for the next generation are coming together – the son of DEIT (multi agency information transfer) is looking at linking together the emergency networks with an IP-based network to better transfer call details between agencies. 'But they are just not coordinated with the end user and the call handler.'

'eCall' – time to take our heads out of the sand

In the near future a vehicle crash will trigger a series of short bursts of tones over the voice channel (using a modem) to a call centre. The data involving the vehicle (ID number, GPS location) will be received by a call centre (in the UK this would probably be BT) via a modem, which will then decode those tones and make them available to the emergency service via EISEC link (the normal location delivery mechanism). 'This is the European Commission's vision for every vehicle sold from late 2015 in Europe,' said John Medland, adding that there had been no such pilots in the UK to date.

Nevertheless the regulations are imminent; manufacturers will be made to install eCall in their new vehicles; and provisions will need to be made to action a response. 'There is a recommendation on members states to ensure all mobile networks support this enhanced 112 call from 2014, and a further bit of legislation has been published requesting members states to select the public safety answering point (PSAP) that will manage these calls.'

Aftermarket eCall devices are also coming in, priced at between 20-50 euros, and are expected to attract safety-conscious consumers. 'Whether we like it or not it is coming. In the UK our Government departments have not signed up to eCall, ensured mobile networks can carry it, or indicated whether BT (or any other PSAP) will need to support this – which is odd considering the time scales. I'm quite concerned because we face the potential of a number of 112 calls coming in with a strange beeping sound at the start of the call and we won't be able to make any use of the vehicle provided information, because nobody is coordinating introduction of this service in the UK and providing funds for the introduction in our call centres.'

Improved location information

Two years ago BT started looking at ways it could help improve the location data it provides emergency services as a result of emergency calls from mobile devices, where currently such data is limited to the nearest cell tower. BT looked at whether an 'app' could be built that would make location available without disruption of the 999 call. 'So we made the smart phone recognise 999 has been dialled, which then activates GPS, and then sends that information via SMS to the central server that we've put together to process messages for the deaf. And then we can compare that wifi or GPS location to the cell coverage to make sure it is reliable.'

A proof of concept app was built on an Android phone and tested with dramatic results – a location radius of 75m using wifi compared to 4km with cell range.

'In tests we can get that sort of information in 65% of situations – so not always, although you can always fall back on cell coverage. Unfortunately we also found some handsets don't

allow the function to work while the emergency call is being made. Some devices have traditionally concentrated all battery life and processing power on the voice 999 call.'

Handset manufacturers are interested in the possibility of altering devices to support this function but require the mobile network companies to require it. 'So I'm going to ask for your help to ensure they understand that there would be huge benefits and that lives would be saved.'

To help build the business case John Medland pointed at some figures from the ambulance service, which state that for mobile callers it took 30 seconds longer per call to get location information and therefore send out a responder – in some cases as long as three minutes if the caller didn't know his location. 'We are hoping mobile networks will make this a requirement on manufacturers to support this facility.'

Summarising, John emphasised that to move forward in all the aforementioned areas (multimedia IP based 999, eCall, more precise location data) there is a need for very clear requirements from the emergency services as to how useful all these technologies would be. 'Central coordination and leadership is needed to move forward. I believe it needs to come from government departments with a clear input from real life users like you that understand the benefits. I think it is important to make use of work already going on – for example from EENA and Next Generation 911 – which is giving us a head start for our requirements. Without that leadership, I could be here in five years' time and still be talking about a voice-only emergency service.'

JESIP – DIGESTED

Joy Flanagan, Engagement Manager at JESIP, presented the Joint Emergency Services Interoperability Programme Update at Manchester Central.

Aims and vision

· JESIP is about ensuring the three blue lights are trained and exercised to work together as effectively as possible at all levels of command in response to major or complex incidents – not everyday routine incidents.
· The overall objective is to establish some joint interoperability principles and ways of working – doctrine.
· JESIP aims to develop greater understanding of the roles, responsibilities and capabilities amongst the tri-service responders.
· JESIP aims to ensure the blue lights are improving communications, sharing information and mobilisation procedures between services and their control rooms.
· JESIP aims to implement a joint training and exercising programme at all levels of command and ensure that lessons learned lead to procedural change.

Why JESIP?

· The roles of other agencies – in particular specialist resources – and the reasons they are being deployed are not well understood between services.
· There are frequent misunderstandings when sharing incident information – for instance the differing risk thresholds aren't well understood by the different services.
· Difficulties with communications between control rooms and between scene commanders, as well as issues with radio usage.
· Acronyms and jargon, different call signage – all are resulting in hampered communications.

JESIP structure

· Ministerial oversight board meets every six months, chaired by Theresa May. Representation by the blue lights in the form of professional bodies: ACPO, CFOA, ACE, as well as key stakeholders.
· Strategic board meets quarterly, chaired by Roy Wiltshire, Chief of Hertfordshire FRS. Representation across the blue lights and government.
· Programme board chaired by Senior Responsible Officer Charlie Hall meets on a monthly basis; representation across all services.
· 10 overall areas are grouped into four thematic work streams: doctrine and organisation; shared situational awareness; operational communications; training and exercising.
· 26 deliverables are shared between each working group with key priorities shown here:
· Doctrine: creating joint working principles, procedures and models for establishing effective situational awareness.
· Training packages; focussing on on-scene and tactical awareness and control room.
· Framework for the future; ensuring that the programme's work is factored into all organisations beyond JESIP's time frame.

Timescales

· Imminent: initial consultation on shared situational awareness models and doctrine (all blue lights).
· After summer 2013: training packages for testing and piloting.
· Q4 2013: quality assurance, methodology and framework.
· Q1 2014: recommendations for sustainability.

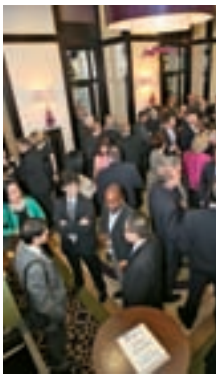
How will we know JESIP has been successful?

· We'll have a joined up and common application of doctrine to support joint working.
· We'll have joined approach on situational awareness, decision-making and risk assessment.
· We'll have improved use of mobile communications with a common strategy for their use.
· We'll have a more co-ordinated and effective deployment of resources at major incidents.
· We'll have a shared understanding of roles, responsibilities, and capabilities.
· We'll have an ongoing governance structure for interoperability.

Multi-Agency Information Transfer – MAIT

Incident Data Transfer Standard Workshop in focus: Cabinet Office (Resilient Telecoms Programme) and British APCO founded a cross-industry group to determine and create a standard and schema for the technical and operational standards requried to provide the interoperable transfer of data between the broad range of organisations that comprise the 'resilience community', writes Sue Lampard, B-APCO President.

"The vision for the long-term future of the programme is to enable all public safety agencies to be able to 'plug-in' to the hub to send and receive data."



Interoperability between the emergency services has been on the agenda for a long time. Yet, even into the second decade of the 21st Century, it cannot be said that we are anywhere close to being truly interoperable.

On a day to day basis, at ground level and between control rooms, working relationships between the different teams are good and they operate effectively together. However, during more significant events and at times of crisis, interoperability becomes more challenging and complex to achieve.

One of the key factors underpinning effective interoperability is the need to share accurate information in real-time. Emergency services (and other responders) need to have that 'common operating picture' that is often described and rarely achieved.

The reality often, is that even for the day to day events, information exchange doesn't happen effectively. In most instances where more than one emergency service is required, a phone call is made between control rooms. Each has its own command and control system with a team of staff to enter information and dispatch resources. At best it can be open to different interpretations - at worst serious misunderstandings.

Whilst there may be aspirations at senior level to combine these functions at control room level, the fact is that the three services perform different functions, require different information and have different responsibilities on scene. The complexity of collaboration, although not impossible to achieve, remains a significant challenge as culture, politics, finance, technology and working practices all play their part in the mix.

Perhaps a more pragmatic way to approach the problem is to take simple steps to join up the technology and begin to develop working practices between control rooms that will be acceptable in all areas to the parties involved.

British APCO is working with the CCS (supported by JESIP) to develop a UK open standard which will allow the technical links to be made. The programme has its roots in the SNEN (Single Non-Emergency Number) roll out, as well as work that has continued in South Wales with the DEIT (Direct Electronic Incident Transfer) pilot.

The team in the Civil Contingencies Secretariat (CCS) understand the need to root the processes used during major incidents on those systems and practices used day-to-day. They offered use of the National Resilience Extranet (NRE) technology to prove the concept of a hub-based approach to incident transfer.

The pilot scheme worked very well, and although the incidents transferred were not delivered to legacy systems in all cases, it was sufficient to demonstrate the benefits of instant electronic information transfer between the agencies involved.

The vision for the long-term future of the programme is to enable all public safety agencies to be able to 'plug-in' to the hub to send and receive data. To this end, it has been re-named as a Multi-Agency Information Transfer (MAIT) scheme, as it aims to include more than command and control incident exchange between the emergency services.

Recognising that the work is so complex the programme is beginning very simplistically. Only Fire, Police and Ambulance will be included and the only aspiration is to replicate what currently happens between those agencies when a phone call is made.

A very basic set of data has been agreed that will be passed between agencies and replicates those questions that would currently be asked by call handlers. It is recognised that this may not be sufficient for every agency (especially in the case of ambulance) and they may need to call their colleagues back for further information. However, the reality is that this frequently happens now! In time it may be feasible to build in more sophisticated question sets to enable agencies to assist each other. A natural progression from there could be mutual assistance with call handling, and ultimately the combining of some control rooms. Simple and structured steps could deliver what has previously failed.

Thus far a User Group with representation from Police, Fire and Ambulance (most of whom are B-APCO members) has agreed the basic data set. The B-APCO Commercial Group has been working in parallel to develop a schema that will be the first stage towards the open standard.

A pilot scheme will be run in the autumn to enable both the data set and the standard to be tested. It is envisaged afterwards, that protocols will be put in place for suppliers to conform to the standard and that work to procure the Hub will start.

Longer term the programme will need to develop the operational aspirations to include the broader public safety family and resultant information exchange requirements. That will be when the real work starts!

Mobile data in vehicles – legal?

Following consultations the Department for Transport has granted UK police forces a three-year conditional exemption from some road traffic legislation. This is to allow forces that use mobile data to research solutions that enable them to comply with legislation relevant to the use of technology in moving vehicles, explained Inspector Andy Sigee, ACPO Intelligent Transport Systems (ITS).

In 2011 ACPO Information Management Business Area commissioned a study to examine how existing use of mobile data in police vehicles complied with the relevant legislation. ACPO ITS undertook this work and a questionnaire was sent out to all UK police forces requesting details of their existing in-car technology.

The responses, in combination with conversations with the Department for Transport, revealed that the use of technology in vehicles could potentially result in UK police forces contravening legislation. 'Police and emergency service vehicle drivers are increasingly being provided with information, including information received via internal vehicle screens, while vehicles are in motion,' said Inspector Sigee.

With the delegates' help a list was drawn up of the different kinds of technology typically found in an emergency vehicle: fixed screens (sometimes multiple); laptops; PDAs; Sat Navs; personal devices; radio handsets (fitted and personal); emergency warning equipment; video cameras; tablets; ANPR.

'There are three pieces of legislation relevant to these types of devices and technology', explained Inspector Sigee.

1. Regulation 109 of the Road Vehicles (Construction and Use) Regulations 1986 provides for the use of television sets or other monitors in motor vehicles. Although the regulation has been overtaken by technology (eg it refers to cathode ray tubes), the Department for Transport has confirmed that Reg 109 still applies to the types of screens used in police vehicles. Inspector Sigee said: 'The Department for Transport have told us that, in its strictest interpretation, there could still be a breach of the legislation even if screens are switched off.'

There are exemptions to Regulation 109, and these include screens installed by a manufacturer which show information such as temperature, tyre pressure, sat nav data, and reversing imagery.

2. Regulation 110 of the Road Vehicles (Construction and Use) Regulations relates to mobile phones and it was introduced to stop drivers using their mobile devices whilst driving.

3. The last piece of legislation, Regulation 104 of the Road Vehicles (Construction and Use) Regulations is more generic and deals with distraction to drivers. 'This includes the positioning of devices, use by a driver and devices that might cause distraction to the driver. Even where vehicles are double-crewed and it is the operator using a device, this still has potential to distract a driver,' said Inspector Sigee.

Additionally, there is Health and Safety legislation and Corporate Manslaughter legislation that has implications for organisations and services that employ drivers. 'We ask people to drive vehicles which have technology fitted that helps them to do their jobs. There are benefits to the emergency services in them using it but we have a responsibility to those people and the public to ensure it can be used safely.'

ACPO ITS sought the advice of a human machine interface (HMI) specialist who was clear that increased levels of technology in police vehicles coupled with the requirements of the policing role has a direct impact on drivers ability to safely drive vehicles. 'Drivers use the same parts of their brain to drive as they do to listen and talk on a radio'.

Inspector Sigee discussed how forces could ensure vehicles are used safely. Having policy and procedures is important but there are technological solutions.' A number of information sources on standards relating to human machine interface are available. The two key documents are provided by the Transport Research Laboratory (a human factors interface checklist*) and the European Principles on human machine interface*. So, for example, where a Command and Control system might deliver incident information to vehicle screens with visual and audio alerts, the HMI guidelines and principles can be used to minimise distraction to a driver.'

'The responsibility for safety is shared and includes drivers, installers, operational managers and those responsible for procuring systems and equipment,' said Inspector Sigee. 'Failure to address these issues brings other risks. There are potential financial liabilities such as costs to defend accident and injury claims and the reputational risks from not complying with legislation.' There is a balance to be sought between information that must be available and that which is useful or 'nice-to-have'. Whilst driving to an emergency, a driver needs to know the status of blue lights or sirens and to be able to safely change their function or turn them on or off. Emergency crews going to an incident need to be kept updated on hazards that may be faced on arrival. 'There may well need to be driver/machine interaction if there is no passenger. What does the driver need to see? We need to consider that question carefully when we talk about technology. We may have been too focussed on the technology benefits rather than what a driver can safely deal with'.

One solution may be 'to turn everything off' in a moving vehicle but then many of the benefits of the technology are lost'

The police have been granted a temporary exemption to Regulation 109 on condition that work is undertaken on identifying permanent solutions. ACPO ITS has sent its review of the work carried out so far to UK police services and suggested some options to work towards solutions to these issues.

The workshop was then opened to the floor and a number of suggestions came ranging from further legislation exemptions to the establishment of less distractive and simplified technology.

Inspector Andy Sigee, ACPO Intelligent Transport Systems.

** TRL has developed an HMI safety checklist with which we can assess driver workload and interaction with multiple displays/ warnings, taking into account human abilities and characteristics (including fatigue, vigilance, situation awareness and physical factors and human error).*

** In December 1999, the European Commission adopted the European 'Statement of Principles' (SoP) in acknowledgement of the importance of the human-machine interaction (HMI) for in-vehicle telematics.*

Euros Evans, Chief Technology Officer, Airwave.

Facing the data challenge

JESIP, ESMCP, LTE – nobody can deny that the public safety telecoms environment is facing a period of potentially seismic change. British APCO Journal catches up with Airwave's 'technology guru' Euros Evans to find out what he is thinking.

Where are we now?

Busy! These are interesting and exciting times because we've understood voice for a long time and I think now there is a genuine need to explore what we could do with data.

In the melee of things there is some confusion as to what is mission critical data and what is business critical data – and what is ordinary data. The important part is how it is going to change operations. I don't believe data will ever substitute voice completely, nor do we want to deliver data in the field just because that's the way we do it in the office. It could actually radically change how we deliver emergency services.

Why is this complex for public safety?

It's a vicious circle – let's look at applications, business cases and bandwidth. Neither would exist without the other. You can sit down and say, ok, let's deploy a high bandwidth network for public safety. But that is an expensive experiment, and the analogy would be to build a motorway because we think one day we'll have motorised vehicles – and that's the danger of what we are trying to do with LTE. Our challenge is to help our customers identify what is critical and what is not – so that at a later date they will be in a position to capitalise on it.

How can we define 'mission critical'?

One of the best definitions that I've heard is that it is data that is going to transact with a machine or a human, and demands an instant response. From a health perspective it might be me having a heart attack at the side of the road. The paramedic wires me up to a portable machine and sends that telemetry to the nearest hospital – it only becomes mission critical if someone at the other end – at the hospital – can tell whether or not I'm having a heart attack. In policing, a car could be doing ANPR and using the data stream for validation – I would describe this as somewhere between non-critical and business critical. However, if at that point you find out about a bank robbery associated with the same number plate, then it becomes mission critical. It constantly changes. Take a firearms incident – if you intend to implement a new process because you have mobile data, you need to ensure applications that are now mission critical are supported.

What are the challenges with data?

One of the things we are very mindful of is the difference in data use between consumers and the emergency services.

As consumers we tend to download large amounts of information, and actually upload very little data. In public safety the balance is 50/50. A lot of it is directing information from the field to the control room, which is challenging without the appropriate technology. One of the projects we are currently working on is bonding bearers in a vehicle in order to deliver more information to the control room. With Surrey Police we are streaming live video from a police pursuit vehicle to the control room. This technology is creating genuine change. Once you have live video in the control room, it is easier to explore how it changes the way you operate. For example, it may change how pursuits are managed from the control room because it is no longer necessary to listen to voice dictation to ascertain the level of risk.

Will the future be LTE?

That is the million-dollar question. Some say yes, some say no. I'm more in the maybe-to-yes camp. The bigger question is when will LTE actually be available. There will be various decisions that we – and that is the big 'we' – have to make.

OnStar leading the way

As the United Kingdom contemplates pan-European eCall, OnStar's approach as the global leader in telematics addresses some challenges faced by the emergency service community (police, fire, ambulance and 999 emergency response). OnStar has been a trusted partner of emergency services in the US and Canada for over 17 years. Our unique approach to this relationship is to work with emergency services, doing what is best for those in need with open lines of communication.

Since OnStar's inception in 1996, emergency services have been instrumental in developing OnStar's safety and security offerings such as Automatic Crash Response, Stolen Vehicle Slowdown and Remote Ignition Block. This collaboration also resulted in processes used to handle and triage emergency calls. The result is a streamlined interaction between emergency service personnel and the OnStar advisor, which minimises impact on the finite number of emergency responders and resources.

What is OnStar?

It is an embedded vehicle telematics system that combines cellular communications, global positioning system (GPS) satellite location and live human interaction to provide assistance to people in need. It is simple and easy to use and offers automatic crash notification, a red SOS button for emergencies, a blue OnStar button for non-emergencies and a white voice command button. There is also a free number customers use to request vehicle unlocks and stolen vehicle assistance.

How it works

GPS satellites provide the exact location of the vehicle. When a crash or button press is signalled from the vehicle, location, voice and data are sent via the cellular system to a specially trained advisor at an OnStar call centre. Advisors triage the call and, if necessary, contact the 999 call centre.

Automatic crash response

In the event of a moderate to severe crash, the OnStar system can automatically send a signal and transmit crash information to the advisor who assesses the situation, determines injuries and relays information to the geographically appropriate 999 call centre. The local emergency dispatcher then sends appropriate help to the scene.

In-vehicle emergencies/good Samaritan calls

Occupants of an OnStar-equipped vehicle can also request emergency help through the use of the SOS button. The advisor determines the nature of the emergency and contacts the geographically appropriate 999 call centre if needed. These types of calls include medical emergencies and reporting incidents on behalf of others (good Samaritan/citizen).

The importance of call triage

The United Kingdom understands the benefits of professional level triage of incoming calls. In OnStar's experience approximately 75% of SOS button calls are vehicle occupants pressing the button by mistake. The reasons for this vary; adjusting the mirror, repair shop fixing the vehicle and the husband/wife/child/dog pressed the button by mistake. At OnStar, these calls are triaged by the advisor speaking to the occupant and do not result in calls to a 999 call centre. For SOS button calls, if an advisor does not make voice contact with the occupant, procedures are in place to re-contact the vehicle (which sends an audible tone) and triage the call based on location (vehicle located at owner's home) and sounds heard (repair shop noises). The advisor can call the location and quickly attempt to verify the need for emergency assistance. If unable to verify help is *NOT* needed, the advisor will contact the 999 call centre and request a welfare check of the occupants. Moving vehicles with no response, unless sounds of distress are heard, do not result in a call to a 999 call centre.

Emergency services as a partner

Emergency service partners in the US and Canada appreciate this triage and call-handling, and OnStar couldn't offer it unless we understood the demands on 999 call centres. How is this accomplished? The table below describes a few specific ways OnStar works to achieve this goal:

Service	How it Helps
▪ Confirm location of incident	▪ Correct location = Correct 999 Call Centre jurisdiction, sound horn/flash lights to help locate the scene (i.e. vehicle off the road).
▪ Filter and triage calls	▪ Determine if emergency services are needed, don't call 999 Call Centre if they are not needed.
▪ Offer to stay on the line with caller until help arrives and provide additional offers of assistance as appropriate (i.e. call a loved one)	▪ Frees up Emergency Services resources for other calls while allowing the advisor to monitor the situation, provide emotional support and re-contact the 999 Call Centre if necessary.
▪ Non-emergency button - 30% of all OnStar 999 Call Centre contacts come in on the non-emergency Blue Button (i.e. Callers don't want to "bother" the emergency people, feel their issue is urgent but not an emergency – "just a little chest tightness").	▪ Call appropriate 999 Call Centre for emergency calls reported on the non-emergency button

Emergency services: ongoing partnership

Like any relationship, OnStar's partnerships with emergency service require hard work to maintain them. Just some of the activities OnStar proactively takes to nurture these critical relationships include:

- Activities supported by dedicated team with emergency services background.
- Maintain continuous dialogue.
- Participate in emergency services conferences – stay visible and available for feedback.
- Keep information flowing through dedicated emergency services website www.onstar.com/publicsafety.
- In the US – recent creation of an Emergency Services eNewsletter.
- Dedicated emergency services e-mail box (for US/Canada emergencyservices@onstar.com and region specific addresses for other global regions) for non-emergency communications.
- Dedicated 999 Call Centre call back number (for communications with OnStar call center about active emergency calls).

If you have any questions, comments or concerns please contact Cathy Bishop at catherine.bishop@onstar.com or 00-1-313-667-6757.

Digital forensics – collaborative success

New collaborative technology introduced by the Royal Military Police Service Police Crime Bureau (SPCB) is proving its worth three-fold and Major Miller, Officer Commanding the SPCB, believes this technology could also benefit civilian forces in terms of efficiency and cost savings. Major Miller speaks with Jose Maria Sanchez de Muniain.

Major Keith Miller, Commanding Officer of the Royal Military Police Service Police Crime Bureau. Below: ARES, the high-end hardware that lives at the Cyber Crime Centre.

Talk us through the process

An investigator seizes electronic media and he doesn't believe he can read it on tier 1, on the ground, so he sends it to us for analysis. The item comes back in an evidence bag and is booked in and then an initial assessment takes place to prioritise it, based on the nature of the case, timing and how complex the technology will be to forensically examine.

The data is then ingested in ARES, our high-end hardware solution at the Cyber Crime Centre (3C), which sucks out everything onto a data farm, taking a digital image of every device, without making any changes to the electronic evidence. Then the processing starts: data crunching and dividing it into its constituent parts and linking it into some semblance of order that you can work with.

Isn't that what happens in all digital forensics?

The old way of conducting early case assessment involves a highly trained digital forensics analyst going through all the evidence held on each device, using a single dedicated tower computer. The analyst goes through everything from start to finish and then hands evidence to the investigator. This ties up the tower and analyst to a single case and if the system crashes, or there is a power failure, the analyst has to start right from the beginning. However, because we are using a big server array running AccessData Lab, there is the opportunity to share the evidence across different desktop computers and to bring the investigator into that collaborative environment.

Why is that important?

The investigator knows more about the people involved in a case than the forensics analyst. For example, if you tell a highly trained and costly forensic analyst to find indecent images, he will go through that device and find every instance of indecent images. In one actual case, the analyst found all the images but he also saw a couple of pictures of a young girl, fully clothed, with the suspect, which he thought was innocuous – and rightly so. However, the investigator, who knew the case inside out, saw that image and remembered that the suspect had said in an interview that he had never met that girl. So there was a problem here. The investigator went back and opened another investigation which found that the girl was also a victim.

The investigator knows the details of the case best, so if you can bring the investigator into that process early on, you are going to get a better result.

What work is involved for the investigator?

During the early case assessment, ECA, the investigator looks at the ingested data through an easy to use graphical user interface, AccessData Forensic Toolkit (FTK), that shows everything that came out of the process: emails, images, video files etc. He can pick and choose and can then tag particular items, for example, images. We keep it simple with a drop down list: evidence; not evidence; refer to the senior investigating officer (SIO); etc. So the result is a tagged product.

Why is that so helpful?

Now we have a tagged product, the investigator can sit down with the forensics analyst and the lawyer and make an assessment very early on about the viability of a case. The lawyer may say there is nothing there at all, so let's get out now. That's great because we have not invested heavily in the forensics analyst at this point and it's off the books. If we are dealing with a child abuse case, there is a stigma attached, so the sooner you can clear a suspect the better for him and his family.

The other outcome is that a lawyer may say there is evidence that can be tagged to the suspect so the case can be taken to trial early. We've had a couple of occasions where this has resulted in a guilty plea and gone straight to court. So again, we've reduced delay and not deployed the highly trained analyst.

The third option might be that there is evidence, but the suspect's fingers can't be tied to the keystrokes that introduced the material to the electronic device. So now we have to use the forensic analyst to prove it was the suspect that introduced the material.

What has this collaborative approach meant for your unit?

My staff of 16 has always been a small resource. Now, at any one time I have 25-30 people working here, as the rest are investigators. So I have expanded my footprint by being able to bring the investigators in. Not only that, I've reduced a layer and found more evidence as a result of the investigators bringing their knowledge to bear. Speeding up the early case assessment process has

enabled us to put our expensive analyst resource where we need it most, thereby lowering costs as well as reducing delays.

Can you talk numbers?

We calculated that under the old system of one person: one tower, early case assessment undertaken in a typical child abuse case would cost on average £9,500. With the new system it came to £3,200 and as well as the fiscal saving there was a reduction in early case assessment time from 300 to 100 hours. Extrapolate that over a number of cases over a year and you start seeing savings straightaway.

That is the argument I took to prove the business case. But what we didn't realise at the time was the additional benefits of bringing investigators into the early case assessment process and expanding the manpower footprint. That will feature in our final review of the AccessData Lab collaborative technology.

You were using AccessData's Forensic Toolkit already – how did the collaborative approach begin?

The Iraqi Historical Allegations Team was tasked to look into allegations of abuse during Gulf II and the data set for that was around 75 terabytes of information, which would have taken years to process on standalone towers. We looked to AccessData, which provided FTK software and Dell, which provided the hardware, to provide increased data handling capability. With the increase in personal electronic devices, we are getting more data sets. The average digital footprint for an individual is now 3 terabytes just from home use. We still only had 16 members of staff on our team, so we needed something new to cope with the increase in digital evidence that needed to be processed.

Have you had interest from other organisations?

We've had lots of civilian police visitors here. Everyone wants to get on the bandwagon but there are two hurdles. Firstly, fiscal pressure and secondly, lack of understanding of the maturity of the technology. The perception is that the tech is not there yet.

The system doesn't have to be as big as ARES, our data centre has one petabyte of processing power, which is massive. The only system that comes close is the FBI's on the east coast of the US. It doesn't have to be that big, but what is key is that the system is scalable.

Any further developments?

We realised we wanted to be able to conduct digital forensics investigations on the ground, in Afghanistan for example, so we developed a mobile version of ARES, which we dubbed 'MARS', the son of ARES. MARS is a black ruggedised box about the size of a coffee table, which can be transported anywhere in the world. With about 500 terabytes and three or four laptops you can do everything that ARES does, while on the ground.

Are civilian police interested?

Devon and Cornwall have a version but in a different configuration. The main cost is the hardware, but with civilian forces there are other considerations, for example, if they wanted to collaborate with neighbouring forces, or over numerous locations, this would involve secure links.

COLLABORATIVE TECHNOLOGY: TAKE-HOME POINTS

- Time per case reduced from 300 hours to 100 hours, equating to cost reductions from £9,500 to £3,200.
- Lawyers can be brought in to review evidence earlier in the process and decide whether there is insufficient evidence to go to court; or enough evidence to go straight to court; or whether further forensics is necessary.
- Innocent suspects can be cleared more quickly and released from custody.
- Guilty pleas are often entered more quickly once digital forensics evidence is produced, saving court time and costs.
- Investigators involved in the case bring their knowledge to bear within the early case assessment.

The destination for public safety apps

Apps for public safety are growing at an impressive rate – which is why APCO International decided to launch a dedicated online application community. Jose Sanchez spoke with Jeff Cohen, APCO's Chief Counsel for Law and Policy, and Mark Reddish, Government Relations Associate, to find out more about AppComm.

Back in 2011 a report by MarketsandMarkets ('World Mobile Applications Market 2010 – 2015') said that the total global mobile applications market was expected to be worth $25 billion by 2015. Yet in June this year another report by ABI Research suggested the mobile app market could be worth as much as $27 billion by the end of this year. With sales outpacing predictions for the mobile app market it is obvious the time has come for the public safety environment to embrace this new world – or are at least stop pretending it's not there.

Acknowledging this unprecedented growth as well as the potential benefits for the public safety community world wide, in April this year APCO International launched AppComm. The community aims to provide a single, trusted online forum dedicated to public safety and emergency response apps for use by the general public, developers, and first responders.

AppComm is easy to navigate and visitors can quickly search by category (fire, alerts, police, EMS); device (iPhone, Android, Blackberry, Windows) and price (paid/free). Each app is accompanied by a developer's description as well a users' rating. Some apps are repositories of existing guidance – for example Emergency Response Guidebook is derived from the Dept of Transportation Emergency Response Guidebook) – whilst others are more sophisticated communications tools (eg WAVE Mobile Communicator, which turns a smartphone into a multi-channel radio handset that sends and receives secure audio).

Not all apps are for first responders. Earthquake by American Red Cross notifies people when an earthquake occurs, and includes some useful features in helping prepare for an earthquake; find help; and let others know their safety status. EmergencyAUS enables the public to share comments and photos of emergency situations in real time to help keep others informed.

The third broad app category is made up of hybrid apps, which are aimed at consumers but housed as an enterprise-type system by public safety agencies, such as the See Something Send Something app. This is a tool that enables the reporting of suspicious activity (in relation to terrorism) to the appropriate agency.

Jeff Cohen emphasises that AppComm is very much at an early stage and as such is relying on crowd sourcing principles in order to evaluate suitable apps. What this means, essentially, is that public safety professionals and APCO members are encouraged to share their opinions about apps via the star rating system, as well as AppComm's newest feature for sharing thoughts and opinions – Group Talk – which seeks front-line experiences.

Mark Reddish points out that in terms of web traffic and links to download pages, the most popular pages are the resources for first responders (as opposed to the general public), with a good balance between fire, police, EMS and call centre professionals.

As for usage of apps by entire departments (as opposed to individuals) for day-to-day operations, there is wide disparity in the USA – some do, some don't. But the trend is upwards, as Jeff Cohen says: 'Some apps require an agency to buy the solution for use at enterprise level and some are doing it. It varies but at the same time we recognise that as a younger generation enters the population they are much more familiar with these kinds of apps.'

Mark Reddish, a volunteer firefighter, agrees that apps are not pervasive yet. 'Around 30% of my squad uses apps either for EMS or fire and rescue, some during every call. Others don't use apps on the job at all.'

In parallel to its AppComm work – and bearing in mind this is virgin territory – APCO is internally determining the high-level factors that should be applied to apps for this sector. 'APCO, as an American National Standards Institute (ANSI) certified Standards Developer has filed a project initiation notice announcing our intent to develop and publish a standard that will address the interface of apps designed to communicate directly with emergency communications centers. It is APCO's goal to develop standards that will provide uniform access for apps that have the greatest impact on safety/emergency response,' explains Jeff Cohen.

The operational impact on emergency dispatch is one of the aspects that APCO's standards work will address. Although APCO has up to now not heard of any horror stories involving – for instance – apps providing erroneous information to first responders during critical incidents, it is a risk that APCO is aware of, says Jeff Cohen. 'We need to prevent that from happening, and that is why we are exploring some initial criteria that APCO can eventually share with FirstNet in terms of vetting apps.'

FirstNet is one of two important trends that are driving the thirst for apps in US public safety – the other is Next Generation 911 (NG911).

The Ng911 Project aims to update the infrastructure in the US to enable the public to transmit text, images, video and data to call centres.

FirstNet (First Responder Network Authority) is the deployment of a nationwide, interoperable public safety broadband network, which will enable first responders to utilise apps as essential components of emergency response. 'We are working closely with FirstNet right now because it is envisaged they will have something like an app store just for FirstNet. We want to complement what they do, using our site to establish this community and figure out what is important for public safety,' says Jeff Cohen.

Interest from the public safety sector has been high and – interestingly – not just from the US. Mark Reddish points out that web traffic has been surprisingly global. At the launch of AppComm there were 65 apps and the number has nearly doubled in less than three months, with page views sitting at over 100,000.

This tallies in well with the message that AppComm is not just a solution for the US. At the launch of AppComm on the 23rd April 2013, APCO International President Terry Hall said, 'APCO appreciates the support and continued partnership of the Global Alliance and looks forward to its participation in growing the AppComm community. By supporting AppComm, the Global Alliance opens the site up to first responders across the globe, providing valuable insight on apps that ultimately benefit public safety.'

Change your thinking on communications

Technical developments are stepping up a gear as the critical communications landscape readies itself for the next step of its evolution. With major changes looming on the horizon, communications staff are under pressure to prepare for the arrival of a new data-rich future that promises huge benefits – but also greater complexity.

Focussing exclusively on technologies and services for the public safety sector, British APCO's Annual Professional Exhibition and Conference is the only must-attend event of the communications professional's calendar.

Who should attend?

- Control room and call centre staff from emergency services; local government; utilities and petro/chem sectors; road/rail/air and mass transport industries.
- Professionals in the emergency services with responsibilities for using and developing social media channels.
- Software developers servicing the public safety sector.
- Communications equipment suppliers
- Service providers to the public safety market.

Why attend?

- Specifically for end users: British APCO 2014 is Europe's leading free public safety exhibition aimed specifically at end user staff.
- See what's new: at Manchester Central visitors will discover the latest technologies and see at first hand the systems that could shape the future of front-line operations.
- Join in the debate: visitors can discuss their issues with subject matter experts in the FREE Professional Development Workshops.
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Where & when

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