British Association of Public Safety Communications Officials

BRITISH APCO JOURNAL

Knowledge Exchange for Public Safety Communications

Identifying the right technology – a tried and tested approach

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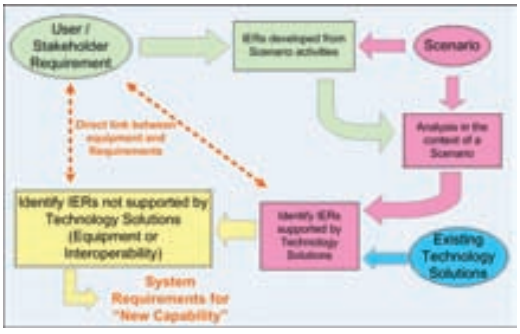

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NEWS

05 NPIA in eForensics speed trial

06 SCAS completes virtual I/CAD

07 Airwave tests Olympics comms network

07 Surrey Police tries community CCTV

FEATURES

10 New network partnerships
The burial of FiReControl is giving birth to a host of new initiatives in the Fire Service, including the ambitious Networked Fire Control Services Partnership.

13 One Box that is full of tricks
Technology can help to ease the pressure on resources – especially vehicle costs.

14 The three-minute interview
We talk with Airwave UK Services Director David Sangster about what Airwave has been upto recently, taking in the riots, London 2012, and the future.

16 Networks in focus
Public safety organisations in the UK could start using LTE now, says Alcatel-Lucent; when it comes to public safety networks, it pays to play the long game, says Motorola.

18 Identifying the best technology
A tried-and-tested approach does indeed exist to join together the needs of end users, techies, suppliers, and decision makers.

22 A quarter century of communications
On its 25th year anniversary PageOne looks back at how comms technology has changed – and there is plenty more to come.

REGULARS

04 President's address.

08 British APCO: news and comment

BRITISH APCO
Knowledge Exchange for Public Safety Communications

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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

Alan House, President

The work to develop and modernise British APCO continues at a fast pace. We have had great feedback on the changes to the Journal and work continues to improve our website. Planning is progressing well to deliver our new style Exhibition and Development Sessions in Manchester on 16 and 17 April and our plans are creating a lot of interest and support.
It seems that we are heading for a change in available technology to improve public safety and to inform emergency first responders over a range and on a scale that has not be seen for a considerable period of time. The 'first of the first responders' – those employed in control rooms receiving the first call for help – could have at their disposal a range of technology that will enable them to make accurate decisions in resource selection and mobilisation, with ongoing advice to those responding to the scene, that will allow early command decisions that will reduce incident impact and save lives. But do those in a position to so equip emergency responders actually know what is out there to be included in their range of technology options? Do suppliers know what is actually required to assist emergency responders? Are our partner suppliers actually explaining what is available and how it can be used?
Moreover, are those responsible for our emergency service control rooms in the UK recognising that just receiving 999 calls via voice is no longer an option? We already have a general public equipped with 'smartphones' and in reality they and indeed, the emergency responders having with them their personally owned mobile technology, are often equipped with far superior technology than that provided by the public safety organisations. With 4G/LTE amongst other technology coming towards us at a pace faster than some realise, the range of technology in the hands of the general public around the world will be even greater. The public have an expectation that when they need help they can call for help from a public safety provider. They will, with their greater range of personal technology, be expecting (demanding) that they can seek help by their preferred and usual method of communication, be that voice, text, video or social media. They will also expect to get a response via their chosen method and to be able to keep providing or alternatively be provided with information and advice. If those equipping public safety control rooms do not face up to this challenge, how long will it be before a 'responsible person' faces a court hearing when loss of life is ascribed to not having the right form of technology to interface with the public? Will it be a good enough excuse simply to say that it was not possible to take the call made by the method chosen by the caller if that technology was readily available to be installed in a control room.
At this time when so many fire and rescue services are having to purchase new control room technology following the cancellation of the FireControl project, how many are looking at the range of options available. How many will see this as a 'nice to have' but not affordable or unnecessary, at this time? What better way to assess resource needs and get a full appreciation of an incident in its early stages than by seeing images or streaming video?
I have no doubt that 2012 will prove to be an interesting year in the development of public safety communication technology.

The Commercial Advisory Group (CAG)

Dave King, CAG Chair

It has been a hard year for a lot of us, but on reflection probably not a dismal as we all thought considering the economic state of the world.
So I am positive for 2012, although – not being unrealistic – trading is still going to be tough. But there will be opportunities. With that in mind I also think our show in Manchester in April will also be positive and successful. The ground work has been done for a more inspired event with more active opportunities for attendees, which in my view is the best way of ensuring we can all get more out of this event. Also we must remember that this is our event, and the regional committees of British APCO have been heavily involved in providing ideas and vision for it. However, there is more that can be done, especially by us in the commercial world.
If you have any more suggestions about what you want to see or do at the event, it is not too late, please put them forward. Email, join the discussion on the new Linkedin British APCO Commercial group, as the more you can put in the more you can get out.
I hope everyone has a great Christmas break!

'Relaxed' attitude of Brits to e-technology

An independent survey amongst 1,000 people in the UK on attitudes about the use of mobile forensic technology has revealed that the majority of the British public are comfortable with police using forensic technology to help solve crimes.

The survey, conducted on behalf of Cellebrite, a provider of mobile forensic solutions to the police and intelligence services, reveals that 81% of respondents would be happy to allow the police to extract mobile data from their phone if they were found in the vicinity of a crime scene. 71% of respondents believe that all data extracted in this way should be held by police for a year or more. As further evidence of the relaxed attitude towards policing, 56% of respondents support the British system of allowing police to stop and search a suspect if reasonable grounds for suspicion exist. This is in contrast to the system in practise in other countries like Germany and Holland that requires a judge's permission to forensically examine digital devices like computers or phones. An additional 27% of respondents believe that the police should have greater powers than they currently possess: just 17% believe the police have too much power.

When questioned specifically about the use of such mobile technology to search the phones of motorists suspected of committing a traffic offence, 77% of Brits believe the police should be entitled to extract mobile data from a phone or satellite navigation device with the driver's permission. The survey revealed that – not only is the public happy with the use of such technology in traffic offences – but 91% of those who were happy with its use felt the data retrieved should be used to help solve other crimes.

Commenting on the survey findings Cellebrite co-CEO Yossi Carmil said, 'It's reassuring to see the balanced attitude of the British public in weighing up the need to protect our society against criminals by using the latest available forensic technology and protecting our civil liberties.'

Spot the mast?

This road sign is in fact a four-metre high Airwave mast at the summit of Snake Pass in Derbyshire. With its supporting equipment, generator and diesel tank buried in an underground chamber, the mast is sympathetic to its surroundings.

'The site is in an area of protected natural beauty, so we took great care to make the TETRA mast blend in to its surroundings as much as possible.' said Martin Benke, Airwave's UK Network Services Director, adding that another mast disguised as a mountain rock can be located in the Snowdonia National Park on the Llyn Peninsula in Wales.

Mobile person ID solution from Panasonic

Panasonic Toughbook has launched its 4-in-1 mobile identity checking solution at the Cartes & Identification 2011 show in Paris, which ran from November 15-17.

Designed for border control and immigration, federal and military police patrols and security teams, the latest Person Identification Mini Dock (PIMD) includes a new Smartcard Reader for user authentication, as well as an OCR and RFID Reader and Fingerprint Scanner. The PIMD connects to the Toughbook CF-U1 ultra mobile PC device.

NPIA to help bring offenders to justice faster

An NPIA pilot to speed up the time taken for police to forensically examine technology, including computers and mobile phones used by criminals, could help police officers bring more offenders to justice faster.

This examination process known as eForensics (electronic forensics) often provides crucial evidence in serious investigations. However, as computer crime has increased and techniques have become more sophisticated, the demand on technology experts in force Hi-Tech Crime Units (HTCU) to examine electronic devices has grown by 300% over the past seven years.

To help forces deal with this increasing demand, the NPIA has developed a more efficient way for forces to manage the number of devices that need to be examined.

The current process for police officers to request an examination of a computer or mobile phone varies from force to force. The aim of the six-month pilot, which is now underway is to standardise the process for all forces by providing one management system. The agency has assisted in setting up a central unit in Nottingham to help officers across the East Midlands region with their requests.

Police officers can ring or email one of the technology experts from the five force HTCUs involved in the pilot (Northamptonshire, Derbyshire, Lincolnshire, Nottinghamshire and Leicestershire) to get their examination requests assessed to ensure that the electronic device is correctly prioritised before being sent to their force HTCU for investigation. Early signs indicate that the pilot is proving very successful and when it ends in the new year, the NPIA intend to hold an event to inform all forces of the benefits, lessons learned and new processes that need to be implemented.

THE AACE FOR AMBULANCE

A new organisation, the Association of Ambulance Chief Executives (AACE), has been formally established and launched in the UK. The AACE now represents the chief executives of all 11 NHS ambulance trusts (and all 12 services including the Isle of Wight), as well as those affiliated ambulance services operating in the devolved administrations and Crown dependencies. The AACE is envisaged as a point of contact with partner agencies, in particular the Department of Health and other emergency services at national level.

Virtual I/CAD covers 4 million for SCAS

South Central Ambulance Trust's (SCAS) third and final Emergency Operations Centre (EOC) has just gone live with Intergraph's I/CAD system. This completes a process that creates a three-centre, one-system virtual control room with the ability to balance workloads and dispatch the 'nearest and best' resources for each incident across SCAS' 3,500 square mile region. A network control centre with common telephony platform, integrated with I/CAD will allow a SCAS call taker in any EOC to pick up a patient call from any location in the region.

'We now have a virtual CAD covering a population of approx 4 million people, which thanks to the hard work of our staff, we have successfully implemented with no loss of performance' says Luci Stephens, Assistant Director, EOC. The SCAS held its national leadership position for Ambulance Trust 8-minute response times throughout the third go-live period.

'We have been learning from each implementation phase, increasing the robustness of our training to minimise both risk and disruption to service,' Luci adds. Full resilience is built into the virtual control room which provides greater business resilience across the board.

Commenting on the ambulance service's management of business change, Head of Planning (Operations) Rob Ellery concludes: 'We have brought three very different ambulance services together into a virtual and common call taking and dispatch environment that enables standardised, region-wide working as well with our staff, which is a great achievement to help improve call handling services to patients, through people skills and using modern I/CAD technology.'

Kent tests stop-and-search processes

A new initiative to make stop and search recording more efficient could save the police service more than £1 million pounds a year in paper and administration costs and save thousands of hours of police time.

The NPIA is working with Kent Police to set up and run a pilot before the end of the year that will enable police officers to record the details of the stop (ethnicity, objective of search, grounds for search, identity of the officer carrying out the stop and search, date, time and place) via their police radios rather than filling in a form by hand. The technology automatically transcribes spoken language and stores transcriptions and voice recording on a central computer.

The aim of the two-month pilot is to test how the technology works in an operational environment. Currently police officers have to type the details of a stop and search from handwritten forms into a force system which on average takes a force around five minutes per recorded stop. Computerising the process could mean that information such as number of stops and ethnicity of people stopped could be collated and published monthly rather than yearly.

This initiative is in response to the government's objective to reduce unnecessary bureaucracy in the police service and is also part of the NPIA's Next Steps programme, which works with forces to ensure transparency and accountability in stop and search.

Nick Deyes, NPIA head of the Information Systems Improvement Strategy (ISIS), said: 'This new initiative will potentially transform stop and search recording by standardising the process across the police service, making it more efficient and less bureaucratic – improvements which would benefit both the police and the communities they serve.'

Symphony at Hants

Aligned Assets has announced that having taken receipt of the latest Symphony Bluelight software, Hampshire Fire and Rescue Service has become the inaugural user of the UK's first ever centralised and definitive address database.

After the historic agreement between the Ordnance Survey and the Local Government Group that saw the amalgamation of all local government, Ordnance Survey and Royal Mail address data into what is known as the 'National Address Gazetteer', Hampshire FRS is the first to start using 'AddressBase Premium', the most detailed of the products derived from this national database. This data will give them knowledge of every property, street and piece of land across the county, along with countless 'non-addressable' objects such as bus stops and park benches, all of which are designed to aid – for instance – effective mobilising.

West Midlands FS wins ICT award

West Midlands Fire Service's (WMFS) Information Communications Technology section is celebrating after a double award win at last week's National Gazetteer Exemplar Awards.

The two awards were scooped up by the team in recognition of the excellent technology they created, known as "Chimp", which provides vital data to firefighters as they arrive on the scene at emergency incidents. By utilising mapping data supplied by key organisations such as local authorities, the ICT team has developed a system which highlights potential risks associated with buildings and premises in the vicinity of emergency incidents. Alan Brandon, Corporate Services Director for WMFS, said, 'This information, which is displayed on information screens in fire engines as crews approach the scene, provides valuable information about the premises they are entering.'

Airwave flying high on the crest of the Olympic radio waves

Airwave has successfully trialled and tested the communication network to be used during the London 2012 Games, including a system that uses equipment deployed in light aircraft, in support of the three cycling events.

According to Martin Benké, UK Network Services Director: 'The London 2012 road cycling events present some unique challenges for us, especially given the length of the course and attendant issues around logistics and traffic management. We were able to deploy a solution by using radio repeater equipment operated from two light aircraft flying above, which relayed radio signals from users on the ground to the control centre and vice versa. The talk traffic was in turn taken back to the LOCOG Technical Operations Centre in Canary Wharf via VOIP.

'We deployed an additional two mobile base stations, providing coverage to various venue control centres: one at Hampton Court Palace and the other at Box Hill. These were connected back into the main Apollo network.'

A temporary and entirely separate analogue UHF/ VHF radio system was also deployed, providing communications between the race convoy, as it moved around the course, and the race control centre. In order to cope with the projected increase in demand, coverage for the TETRA private mobile radio (PMR) service – known as Apollo – was enhanced for a test event that took place on 14 August 2011.

Community-monitored CCTV for Surrey

A new web based CMTV (Community Monitored TV) system called Jabbakam is being trialled by Surrey Police Force in an effort to save money and resources and combat anti social behaviour.

The system has saved thousands in surveillance and monitoring costs by replacing traditional CCTV with a social media friendly surveillance system which is simple to install and as easy-to-use as Facebook.

Anti social behaviour continues to be a deeply troubling issue for the public and the police in the UK. A survey by HM Inspectorate of Constabulary in 2010 found that officers failed to turn up to almost one in four (23%) complaints about anti social behaviour and, more than half of the 43 forces in England and Wales could not automatically identify people who were repeat victims of anti social behaviour.

In the borough of Surrey Heath, the crime reduction partnership has taken positive steps in tackling the issue through new surveillance technology in a suburb of Camberley. Until now, the Police had been using a mobile 3G CCTV system which used bulky, expensive and dated cameras which stored footage and took hours to download and monitor.

Jabbakam provides real time images, historical searches and remote control of a camera's position accessible from anywhere in the world via a computer or mobile device. Users can also set their cameras to alert them via email or text messages when unexpected activity is detected.

Surrey Heath Crime Reduction Advisor John Eldridge who has been leading the project in conjunction with Jabbakam, said: 'Results have been impressive so far, with footage already being used for evidence to aid police investigations and resolve crimes. This opens up some exciting possibilities for the wider policing family.'

FACEBOOK IN EUROPE

Facebook has announced that it will locate its third data center in Lulea, Sweden, which lies near the Arctic Circle. The data center is Facebook's first data center in Europe. 'After a rigorous review process of sites across Europe, we concluded that Lulea offered the best package of resources – including a suitable climate for environmental cooling, clean power resources, available land, talented regional workforce and supportive business and corporate environment,' said Tom Furlong, Director of Site Operations.

Nexedge digital radio comms website to demistify the technology

To demystify the benefits of digital technology, Kenwood has launched a new website dedicated to its Nexedge digital two-way hand portable walkie talkie radios, mobile in-vehicle units, repeaters, integrated systems and networks.

According to Kenwood, one of the issues with two-way radio communications is that the technological advances, most especially since the introduction of digital transmission, have served to fuel a perception that it is both complex and expensive to deploy. The new website includes market specific solutions and case studies.

Commenting on the initiative, Mike Atkins, Managing Director of Kenwood European Headquarters (Communications) said: 'We recognise that two-way radio is a tool employed in a client's business, not their preoccupation, so we wanted to ensure that it was more easily accessible and to guide potential clients to a better understanding of the benefits of digital two-way radio and Nexedge in particular through market specific insights, relevant product information and case histories of the system in use. We also wanted to provide a more personal service and have included an online enquiry facility which will allow us to tailor our responses precisely to a specific requirement.'

Public Safety Communications – enhancing today, transforming tomorrow

British APCO Annual Exhibition and Development Sessions: Manchester Central, Manchester, 16-17 April 2012

Plans for next year's British APCO Annual Exhibition and Development Sessions at Manchester Central are progressing very well, says Past President Ian Readhead, and the core activities are on track for providing some new and exciting opprotunities for all.

All of you will be aware that these are very difficult economic times and this is impacting upon the ability of staff to get permission to attend events and exhibitors only want to participate if there is a good chance of meeting the right people with the power to potentially do business.

Whilst this may be a crude analysis, in my opinion it does fairly represent the conundrum which is being faced by us this year. British APCO is up to the challenge.

We have deliberately moved to Manchester to secure exhibition space at a very competitive price and more importantly to provide hotel accommodation at a significantly lower cost than London. We also believe that the current issues involving the future exploitation of communication, mobile functionality, 4G, LTE, TETRA and apps are central to the strategic requirements.

Few of you will have missed the fact that serious disorder in London and Greater Manchester had huge ramifications for colleagues throughout the blue light arena. In particular, this was a significant test of our communications and deployment structures, although there were some concerns, especially about the policing tactics, nonetheless historic police resources were deployed to the capital, at short notice, and by all accounts their communication systems worked well.

I anticipate that there will continue to be much learnt from these episodes and especially the role that social media may have played with those who were determined to break the law.

On a night that probably saw some of the worst fires in London since the Second World War, similar challenges were having to be met by those who work in Fire and Rescue and Ambulance services.

British APCO will be hosting some of the leading suppliers of mission critical communications, emergency information and data and business continuity.

We have also secured the attendance of Peter Fahy, Chief Constable of Greater Manchester Police, who you may have seen speaking recently on the BBC television Panorama programme about the riots in Manchester.

We have also secured the attendance of Robert A LeGrande, the CEO of the Digital Decision who is regarded as one of the leading authorities on the future deployment of 4G, LTE.

We are also pleased to announce that Wireless will be holding the third of their national debates in liaison with Motorola and the TETRA Association on 'The Future of Tetra within Public Safety'. This offers pre-invited attendees an opportunity to get involved in a critical debate which will shape the future direction of how we effectively communicate both at the time of business as usual and large scale major incidents. In addition we hope to be able to provide greater information on telematic capability within vehicles and the management of calls being made from such equipment to our control rooms.

Of course, most of us are aware that it is the opportunity to network with colleagues, meet with suppliers and also to enjoy the social opportunity provided by British APCO that makes this event a must to attend. The location, price, people and providers are all in place, we do hope that you take this opportunity to be there.

If you require any more detail on the event, you can do this by contacting either Lucy McPhail at l.mcphail@hgluk.com, Ian Readhead at ipp@bapco.org.uk or Tony Antoniou at execd@bapco.org.uk.

Having told you all about what it is we are trying to deliver next April, it is with great regret that I have to inform you that one of our Executive members, Brian Carlin, passed away on Saturday 8th October. Brian has been on the Executive as the representative of Scotland for several years.

I know that he was looking forward to our going to Manchester and felt that it would provide a new opportunity for the Association. At moments like this, we need to remind ourselves as to how fragile our moment in time can be. Our deepest condolences are extended to Brian's wife Gwen, and to his two daughters Ruth and Anne. Our thoughts are very much with the family during this very sad time.

Ian Readhead
Past President

BRITISH APCO

Knowledge Exchange for Public Safety Communications

A year in the hot seat, part two: British APCO's transformation continues and is even attracting attention from mainland Europe, writes Executive Director Tony Antoniou.

British APCO is reinventing itself just as the industry faces a new technology cycle with the deployment of LTE and other 4G mobile broadband technologies. There's a need to respond with education and information again, and the organisation has been re-aligning itself in the last year to address that.

I joined the organisation in September 2010, and said: 'The organisation is very much at a cross-roads. It isn't being effective and isn't doing the things it exists to do.' So we began a series of initiatives to reinvigorate the organisation. I wanted to rebrand heavily and go back to our roots, set out what our values are and make the organisation relevant to the 21st century.

I went over to spend time with APCO (in the US) and took a hard look at the good stuff that we can apply. In many respects, the market dynamics now are similar to those at the time of British APCO's inception in the early 1990s. When TETRA first came to market, a lot of people had no idea what was going on and we were needed to represent the user base to the supplier base. We find ourselves at a similar time. TETRA is not going away but we have a whole bunch of very relevant new technology to address.

The nature of that gives British APCO a renewed vision. Things have taken a very viral tack of late. Nobody planned this, it just happened. An organisation in Hampshire has done one thing while one in Newcastle has done another, for example. That generates as many questions as it does answers. There's a whole bunch of newness that has to be embraced quickly and brings a total breath of life for British APCO.

My first comments on taking on the role were that 'we didn't have a crusade' or at least not a clearly identified one. Now, we have multiple crusades and by that I don't mean enforcing a particular vision, I mean there's a job for us to do. Applications, 4G and LTE in particular are the technical issues, and how do these interoperate with our TETRA legacy?

New models such as public private partnerships need to be better understood. British APCO should address education, training and accreditation as well as spectrum harmonisation and what's happening in other EU countries.

It's all about delivering value add for the members. You can layer on top of that social media and all the alternative channels, there's a massive amount to do.

That obviously can't be addressed in isolation within the UK. We've recognised the need to be part of a global alliance. We can't exist in a solitary way anymore. In addition to embracing the APCO international family, British APCO is taking the lead in pushing the APCO approach into the European Union. We've become more and more involved in the EU in a number of places because we're participating in many research projects and that has brought us very close to the commercial base. Europeans have said they can see that we do stuff, and can they join our organisation? They can't, the clue's in the name, but we want to see the presence of APCO expand and will help to create a European entity.

British APCO will be the largest voice for some time but I'm happy to drive European activity (as well as our own beloved British APCO) for as long as that's needed. We're getting an awful lot of response from Europe but British APCO will never lose its UK identity because it is very key to what we do. In spite of the similarities between the UK and a number of European states there are unique internal identities that are key to the way that forces operate successfully. For that reason, there will be chapters across Europe. Some of those may have only one or two members but that will grow.

Our Project activities strengthen our financial stability, alleviating any need for big increases in annual individual membership. They are increasingy involving members during execution, and are helping us to grow the base of permanent British APCO staffers – this will bring a more vibrant and interactive relationship with members. We also need to get stronger representation on the control room floor.

It's time to radically reorganise the organisation's approach to events. The new model for an annual show is one of having villages of interests comprising tents of knowledge exchange. While there will be an exhibition to bring it all together, what sits in these specifically themed sub events and areas, will be of greatest interest and more closely match what we are doing as an organisation. The old event had become extremely dull.

I believe that our transformation is progressing apace, and we're now in a position to better address the needs of our members. The least exciting bit, if you like, has been done, what was broken is fixed and we are now seeing the fruits of that. Now we can focus upon the initial aspirations we had when I joined, and try to keep pace as needs continue to develop and change.

Networked Fire Control Services Partnership

United by a shared vision

The death knell of FiReControl has been the starting gun for many of the UK's fire and rescue services – including the birth of the Networked Fire Control Services Partnership, reports Jose Maria Sanchez de Munian.

In May this year Devon & Somerset, Dorset, Hampshire and Wiltshire FRS agreed to work towards an integrated, supportive and resilient partnership, and one that maintains individual fire control arrangements. The partnership's vision is for a solution that is integrated and resilient. But what exactly does that entail?

Sitting in Dorset FRS HQ located on a Duchy of Cornwall development in Poundbury, Stephen Lee, recently retired Deputy Chief Fire Officer of Dorset FRS and currently part-time Strategic Projects Officer, and Andy Motteram, Fire Control Projects Manager, Dorset FRS, outlined the background of a journey that has every chance of succeeding where FiReControl did not.

By the time the Coalition Government came into power, closely followed by Fire Minister Bob Neil's announcement of a review into FiReControl, many fire and rescue services were already thinking about a plan B. When the announcement of FiReControl's demise finally came in December 2010, discussions took on a more serious note, remembers Stephen Lee: 'We were approached by Hampshire FRS and we talked about options, and at the same time Wiltshire showed interest, saying a networked solution could be shared. As the discussions continued Devon and Somerset also joined the party, as they were also looking at replacing their systems.'

The first option on the table was to consider using the Regional Control Centre in Taunton, but there was little interest from other FRSs in the South West, remembered Stephen: 'And the sorts of figures coming from CLG in terms of future leasing costs were prohibitive unless all the original RCC partners had been in full support.

'The key for us at the time was resilience – how can we enhance it, whilst retaining the benefits of our own fire control,' said Stephen.

Like all FRSs around the country, almost overnight Dorset was having to get used to the idea that there could still be a control room in the county – and a number of questions now arose, said Stephen: 'Did we want to close it, or amalgamate the control room with somebody else? Or did we want to look at the whole question more broadly?'

Dorset FRS – and indeed many fire services – had never felt comfortable with relinquishing 24/7 incident management, and some of the associated issues, to the Regional Control Centre, and the opportunity now presented itself to develop and enhance those very same aspects. 'That, coupled with the desire of our three partners to keep their controls in a meaningful way meant we came up with the same basic premise.'

The Networked Fire Control Services Partnership (NFCSP) is built on the principle that four networked control rooms spread widely from Exeter to Devizes, Dorchester and Eastleigh, have sufficient geographical spread to provide good resilience for each other at times of spate conditions.

An additional level of resilience is also being considered, explained Andy Motteram, and one that involves so-called 'non-geographical fallback', which means a third party region, collective or fire authority could step in should the network fail. 'We have been talking with West Midlands and Staffordshire, who may be able to provide us with non-geographical resilience on a mutual-aid basis. As well as improving the resilience of our response even further, we see an additional benefit of this arrangement as being the provision of quality assurance by our peers'

While resilience was the first major factor that the partnership looked at – mirroring to a lesser extent the networked approach of FiReControl – the second factor was economies of scale, explained Stephen: 'We are looking at a geographic area of 5.1m people, which means there is significant procurement potential. The partnership developed on those two trends – to keep controls with a network solution, and then to work together so we are not all trying to procure the same thing separately.'

Many challenges remain because each of the four FRSs are at different stages of their communications needs. Hampshire, Wiltshire, and Devon & Somerset need to replace their command and control systems, whilst Dorset has a modern system recently upgraded in preparation for the Olympics in Weymouth and Portland next year. 'But the networked approach and the flexibility built into it means that – depending on the outcome of the procurement – we don't all have to change over at the same time. It can be a phased approach,' said Andy.

As well as economies of scale, Stephen points out that once a network has been implemented covering spate conditions, multiple and cross-border incidents, there is the opportunity for reviewing crewing arrangements but this will be considered when the time is right: 'But it's important in terms of the business case that we have put forward to CLG.'

CLG – as you'd expect – plays a crucial role in the future of all FRSs, having put forward £81m out of the remnants of the FiReControl budget for all 45 fire authorities.

Like many other FRSs, the partnership has put together a business case for its share of the funding, which had to be received by CLG by the 4th of November. The hurdle the partnership is facing is that the costing part of the bid is driven by user requirements, which will inform the system design that suppliers will first need to submit against during a tender process. Until the tender process has been carried out the final costs therefore remain unknown, and the bid to CLG includes the caveat that the costs and benefits will be continue to be developed as the tender process progresses.

Andy Motteram has been part of the subgroup that is looking at the user requirements for the four FRSs, and they have been taking advice from guidance work already carried out by other authorities. 'In the meantime we have been evaluating the market and we are quite open in our discussions with suppliers.'

A major influence has been the work carried out in Wales by the fire and rescue services: 'We have visited Wales and viewed what they are doing. It's been quite influential because from a fire point of view we take comfort from proven solutions as we do get nervous if something hasn't been proven in the field. There is real reassurance in the Welsh FRS achievements because it is a networked solution that allows three separate systems to link in, and importantly it is working now. Our model is slightly different in that we are working towards a single resilient system used in a multi-centre environment.'

So far, points out Andy, the Welsh model is handling calls for each FRS, as well as passing information electronically between control centres. 'We would want to take it one step further and look at actually mobilising each others' resources.'

Standard operating procedures

The concept of using national incident types was first mooted by FiReControl in order to facilitate operations initiated by control room operators in different Regional Control Centres, and although standard operating procedures were not part of FiReControl, Stephen believes that having standard operating procedures makes control room operators' lives easier in handling cross-border incidents. 'The South East Region started work on harmonising their operating procedures some time ago, partly as a result of FiReControl, and they carried on after it was cancelled. Dorset and Devon and Somerset were the first FRSs in the South West to get involved in the South East project, and now Wiltshire have come on board. It is an opportunity to optimise our working practices, and having a standard method of deploying assets on the fire ground would be much easier.'

Some of the team at Wiltshire FRS HQ: Mike Scott (Hants), Jane Reynolds-Smith (Hants), Terry Amos (Devon & Somerset), Alli Burrows (Hants), Les Louth (Wilts), Carole Harris (Wilts) and Andy Motteram (Dorset).

Andy adds that the Partnership is currently developing a Concept Of Operations document outlining ways of working including agreed common incident types and terminology, building on work that had already been done for FiReControl.

The future

So far the Partnership is focussing on common call handling and a common mobilising platform, says Andy, using common data and common incident types and procedures to the extent that an operator from Wiltshire could in theory move to Dorset and use the same technology in the same way. And while there is no intention in pursuing a strategy of standardising back-office systems, longer term this could also be considered. 'Certainly sharing data is an aspiration,' remarked Stephen, 'in Dorset we are looking to use developing technology to enhance firefighter safety, including the ability to 'track' individual firefighters in potentially hazardous situations and provide access to information on fireground risks, such as hazardous materials, which can be updated in real time. Our Fire Control is an integral part of this development.'

While funding remains the main challenge, and one that is wholly dependent on CLG's response to the Partnership's business case, Stephen said that there are still some concerns around the kinds of technological answers that are available to the detailed user specification being drawn together: 'And we can't afford to let the project slip because we have partners wanting to replace their systems within a given timescale.'

Legacy technology from FiReControl is also playing its part. The mobile data terminals that are installed in all fire appliances and the fact all partners are MDT1 fire services means all four partners are proceeding in a similar direction. 'We are looking at using a common system for all four of us in terms of mobile data. Our data terminals are not hooked

Introduction to NFCSP (left to right) at Hants FRS: Jane Reynolds-Smith (Hants), Neil O'Connor (Director for Fire, Resilience and Emergencies, DCLG), Les Louth (Wilts), Terry Amos (Devon & Somerset), and Andy Motteram (Dorset).

up to a network yet, and there are different ways of doing that. We've put forward some suggestions on using 3G, as others have, and of course there's Airwave as well. So there are options but Airwave has the advantage of being resilient.'

While mobile data is part of the bid, it is not necessarily a central aspect: 'But we do recognise that if we in Dorset need to deploy a Hampshire vehicle using their MDT, we need interoperability – we need to know where it is and if it's available.'

'Interoperability is absolutely fundamental to every aspect of this partnership and its ultimate success' says Andy. 'The partnership is fully aware and prepared to meet head on the technological, business process and people change to make this work.'

So far the Partnership is working well and Andy ascribed this in part to the fact that – as opposed to FiReControl – this project has not been politically imposed. All four authorities are supportive, in the full understanding of the benefits in resilience and efficiencies. Stephen commented: 'We have four chief officers supporting this. Yes there are always risks. I've worked in partnerships in the past and there can be issues when sometimes a partner falls by the wayside. But here, because there is a clear commitment and need, with obvious benefits, it has every chance of succeeding.'

And so far so good, concluded Andy: 'The harmony between all four partners has been good at all levels. One colleague who recently joined the user requirements sub-group commented it was refreshing to be with a like-minded group of people working towards a common purpose.'

Ironically, it could be argued that many of the concepts that surround the technology and the partnership between the four FRSs owe their existence to the FiReControl project. FiReControl's aspirations may continue to strongly influence fire and rescue service projects for years to come, and echoes of its ambitious targets may be felt for years – and perhaps even decades.

BRITISH APCO HOSTS INFORMATION-SHARING EVENT AT REGIONAL FIRE CONTROL CENTRE, WARRINGTON

The event organised and hosted by British APCO entitled 'Operational Communications – an Information Sharing Event for the Fire & Rescue Service' took place at the North West Regional Fire Control Centre in Warrington. The timing could not have been more pertinent as the very same week details regarding the cancellation of the Fire Control Project were released by the Public Accounts Committee.

The one-off conference featured speakers from Sheffield City Council, the North West FiReControl Project Team, commercial partners Capita and information technology experts Analysys Mason. The event gave Fire and Rescue Service personnel the chance to gain information from key suppliers without the pressure of a sales orientated environment.

Paul Green, Chief Information Officer of Sheffield City Council and Matt Palmer from Capita began the proceedings with their presentation entitled 'Delivering Control Rooms More Effectively'. This examined the challenges faced by the FRS in recent times; in particular, the 20% cut in government spending outlined by the October 2010 Comprehensive Spending Review, and made suggestions for how forces can overcome the hurdles presented by the new budgets. The presentation concentrated on outsourcing and building partnerships with the private sector to create an effective and economically beneficial sourcing structure.

Damian Parkinson and Dominic Whelan followed with their presentation on plans for the North West Fire Control centre, and outlined how they believe it will succeed where the national project failed. The new local project will see Cheshire, Cumbria, Merseyside, Greater Manchester and Lancashire Fire Services make use of the brand new purpose-built centre in Warrington. The plans are aimed at allowing FRS to have a more leading role in the direction of the project, as the control centre will be run by local authorities rather than central government. Improvements are to be made through the procurement of new technology, and by taking the best elements of current systems and incorporating them into the new specifications.

The final presentation given by David Cohen of Analysys Mason took a close look at the way information technology is currently used by the emergency services and how this can be updated to include tools such as social media, VoIP databases, LTE broadband, and the possibility of providing TETRA mission-critical voice-over-LTE in the future.

The second half of the day was designated to plenary sessions allowing attendees the chance to discuss topics covered by the speakers in more detail. Unsurprisingly, Damian Parkinson and Dominic Whelan (FiReControl) had the largest attendance.

A key issue raised in the discussions was that users felt they had too little contact with suppliers throughout the project, and insufficient communications were to blame for its failure. The general response from suppliers was they felt the 'red tape' created by the guidelines put in place by the government was largely to blame, and that they were 'not allowed' to contact users directly, delaying the progress of the project.

One Box to be full of tricks

Police are being hit by rising vehicle costs – but how can technology help ease the pressure on resources? Steve Denison, Managing Director, APD Communications, presents one solution.

The emergency services are under the same pressure as every other public institution. The challenge in these straightened times is to do more with less. Unlike most organisations, the consequences of any failure in the emergency services could have serious implications. It is in this context that the Association of Chief Police Officers (ACPO) began examining the options for enhancing police vehicles to increase safety and security for officers and the public, and reduce costs.

Today, police vehicles carry an array of communications technology and some vehicles are equipped with technology that allows the vehicle to pass data automatically back to the control room about location, usage and performance. Every vehicle is different. That means bespoke installations for each different model, raising costs for police forces. Every equipment supplier needs to work out how to integrate their hardware with the vehicle's data bus, and each vehicle supplies different data in different ways. In short, installing equipment in a new police vehicle is expensive and time consuming: up to five weeks for a high-end vehicle.

The situation is exacerbated by multiple units being fitted to vehicles to fulfill different needs. ACPO's Intelligent Transport Systems working group proposed two solutions: a standardised way of wiring police equipment into the car – known as the 'Single Vehicle Architecture' or SVA – as well as developing a police user requirement for a Driver and Vehicle Data Management System (DVDMS) to improve police driver and public safety, whilst at the same time reducing costs. It was commonly known as "One Box" and vendors were challenged to meet these two goals and provide the most comprehensive DVDMS solution.

After proving that it was making progress in working towards meeting the goals of the ACPO 'One Box' challenge, APD Communications was invited to demonstrate its Driver and Vehicle Data Management System, a combination of the INCA2 in-car unit and Co-Ordinator management software, at the prestigious HOSDB Exhibition earlier this year.

INCA2 is a programmable package of electronics in a robust case designed to enhance vehicles with data communications and an array of interfaces. Using a wide range of networks – WiFi, 3G, GPRS, TETRA and Paknet – it sends data from the vehicle back to a central control room where it can be monitored and managed through the Co-Ordinator software and SQL Server Reporting Services (SSRS). These tools give control centre staff ready access to a wide range of reports on the vehicle's location and outputs from the car's sensors. INCA2 is also compatible with the latest smart devices including iPhone, Android, Blackberry and Windows phones, enabling officers to access in-vehicle information in real-time.

During the review process, the 'One Box' project team found that the combination of INCA2 and Co-Ordinator Reports showed the potential to provide forces with:

- automated management information and alerts on driver and vehicle performance in real time and post event
- fuel consumption monitoring to help compare and potentially reduce fuel consumption, CO_2 emissions, and vehicle wear and tear across vehicle fleets
- information that may enable benchmarking across UK forces
- journey data recording technology to track and monitor vehicle resources, leading to greater optimisation of fleets
- real-time information that may be used as proof of driver behaviour – allowing forces to protect officers
- potential to cut overheads and reinvest budget in front-line services.

Solutions that can help reduce overheads for the UK forces are of increasing importance. With this technology, forces can find ways to more efficiently and effectively manage their fleets, enabling gains in safety and economy through improvements in deployment and driver behaviour.

The combination of the Single Vehicle Architecture and Driver and Vehicle Data Management System has the potential to cut the capital expenditure required on police vehicles, but also dramatically reduce operational costs while increasing safety for both officers and the public.

APD also held a demonstration day at the Millbrook proving ground in June where real cost saving potential was demonstrated to a number of police fleet managers and other interested parties through the use of the technology. In the demonstration, two Vauxhall Astras were equipped with APD's INCA2 and DVMS unit and taken around the track at Millbrook, showing the technology's ability to monitor numerous data parameters in real time including acceleration, braking and cornering g-forces, engine revs and fuel efficiency. In the first instance the vehicles were driven with no consideration of economical driving practices and the fuel consumption recorded. In the second instance an iPhone was installed in each vehicle to display driver feedback through means of a red, amber and green 'traffic light' indicator to assist the drivers to drive more economically. The results were then compared and a 39% reduction in fuel usage was achieved. Whilst this was an exercise under controlled conditions, it demonstrates that there is certainly potential for significant cost savings through more economical driving practices.

ACPO's Intelligent Transport Systems working group asked APD to demonstrate its Driver and Vehicle Data Management System, explains Steve Denison.

Meet the supplier: Airwave

Carrie Service talks with David Sangster about what Airwave has been up to recently, taking in the riots, London 2012, and the future.

David Sangster, UK Services Director, Airwave.

How do you think Airwave performed during the riots?

We're proud. We did a really good job. We get it wrong sometimes, but a lot of work goes into how we make sure we can cope with unforeseen issues, and we did a good job through that. The riots were a real test of our network and our processes.

How exactly did the Airwave service aid the police in gaining control of the situation?

If you think about how you police a major event like the riots, there was at one point 16,000 officers on the streets of London, with different forces from across UK providing officers from their patches. When you are providing officers from say Cardiff to London, at a moment's notice, one single system across the country, which can be used by all the different services is really critical. This allows forces to respond to an incident in a much more joined-up fashion.

How does the service compare to systems used by emergency services outside the UK?

We've had 30 different governments come over to the UK in the recent past to see how we do it, to see if they could replicate what we have. I think it's fair to say, we as a country should be proud that we have got the best system supporting our emergency services.

At a Home Affairs Select Committee hearing reviewing the riots, Bill Bratten (ex-chief of LAPD and advisor to David Cameron) was asked about the difference between US and UK policing, and he said: "if we'd had riots like this in America then we couldn't have coped like you did…because we don't have the telecoms infrastructure". They don't have a ubiquitous radio system like Airwave."

Emergency services are expected to save 20% over the next four years – how can current processes be adapted to achieve it?

Well in the police, forces are realising that savings can't be achieved by redundancies or the usual things organisations do to save a few pounds. They've got to fundamentally change the way they police. Some forces are now doing opening themselves up to the private sector, saying come and take a real hard look at our processes and see how technology can better help the public sector.

One of the things we're doing is deploying electronic devices that enable officers to take statements electronically. If you were stopped in the street by a police officer after you had witnessed a crime, they would take out their notebook and start writing down what you saw. When they've finished with you they will then go back to the station to log in to the system, get their notebook out and type out what's said. A long, labour-intensive process follows to ensure that the report goes to the right department.

We propose that officers have an Airwave radio and a PDA-type device so that when an officer stops you and asks you to be a witness, he will enter the information directly into the device. He will push 'send' and the information will go back through totally redesigned processes to make sure all the right people will get the information. When you do the analysis of how much time, energy and effort is saved it's really stark. So deployment of relatively straightforward technology that we all take for granted in our consumer world is starting to make a big difference to policing.

A good example of this is Surrey Police. They are the only force who have publicly said that despite the 20% budget cuts they are going to increase frontline officer numbers. They are able to do this by totally redefining and re-engineering all their processes. This is allowing them to make head count savings in the mid and the back office and avoid duplication and paper processing, saving money which can be re-invested in the frontline.

What is the future for Airwave given the increasing talk of LTE?

TETRA is established as the technology of choice for mission critical voice because it's the right solution. In the future, 4G will be rolled out but it does not have the capability to facilitate mission critical voice. The industry's view is that in the next five to ten years you will see developments in how to do mission critical voice over LTE. My view is that for the foreseeable future TETRA is going to provide that core voice and low bandwidth data need for the emergency services. There are services we provide that are over the GPRS network that could migrate to 3G and then later to 4G, as this technology becomes available. But there are question marks around security and particularly resilience. If you were to use 4G, is it going to be partitioned part of the mobile network operator? From an Airwave perspective we are looking very closely at what LTE can or can't do.

LTE comes in many flavours

The significant benefits of mobile broadband for public safety continue to be debated but emergency services could start using LTE now. Jose Sanchez de Muniain talks with Steve Mooney of Alcatel-Lucent.

Solution Architect Stephen Mooney, Strategic Industries Solution Integration Division (Public Sector), Alcatel-Lucent.

There is no getting away from it – some kind of LTE network will be up and running near you some time soon. And whilst these will mainly take the form of commercial networks, there is also a small and growing number of public safety implementations quietly taking place around the world.

While everyone is aware of the step-change approach taken in the USA where the whole country is moving to a public-safety focussed LTE network, not many people may know that Charlotte County, for example, is already implementing the first public safety LTE network in the US, with full deployment expected by July 2013. The network (700mhz) is being funded mostly by a $16.7 million grant from the US Department of Commerce.

In Sao Paolo, Alcatel-Lucent is trialing a 700mhz LTE with the police to investigate how LTE interoperates with existing mission-critical land mobile radios.

And while undoubtedly the emphasis currently lies on mobile broadband as a commercial offering, Steve points out that considerable workis being carried out to fully understand the complex, highly demanding requirements of the public safety sector and how they can be integrated into the existing LTE standard.

> What if you could offer better use of the commercial network and in times of disasters or large incidents, you could use a deployable LTE network?

One of the main drivers for LTE in the public sector, says Steve, is simple: situational awareness. For 'situational awareness' read 'video' and the sharing of information across agencies, which are the application expected to impact public safety the most. 'What is normally a centralised hierarchical structure with a command and control type chain is somewhat flattened by LTE, where information can be moved from one party to another in a far more efficient and effective manner – and that has got to increase situational awareness, which is one of the main drivers for everyone.'

Needless to say the current infrastructure in the UK doesn't support this, but Steve points out that the journey to video will be greatly facilitated by the public sector's take-up of non-mission critical applications specifically tailored to their needs but delivered through commercial networks. 'The situational awareness benefits that this technology will bring, coupled with increasing levels of robustness in delivering reliability means you'll see more and more public-safety applications being used and becoming the norm.'

Of course it would be great if the public sector could have its own dedicated network covering 100% of the country with fantastic reliability and resilience but this, admits Steve, is unlikely. But there are other models available. TETRA does offer that kind of functionality for voice, as well as (limited) data. Officers are already using devices for non-critical data traffic over commercial networks. So what is missing? 'What if you could offer better use of the commercial network and in times of disasters or large incidents, you could use a deployable LTE network? We can offer a deployable network in a box at a fraction of the cost of what would normally be a commercial network, so they can still use their devices in a different mode of operation.'

The flexibility afforded by LTE – which Steve explains is supported by a standardised IP architecture – offers multiple possibilities for the public safety sector. Alcatel-Lucent, for example, is currently conducting a trial with Arqiva in West Wales, looking at the 800mhz bandwidth that was part of the old analogue channels now redundant through the digital switchover. The focus here is on using this spectrum to offer rural broadband access, but at incidents in rural areas there is no technical reason why this spectrum couldn't be used by the public safety sector, for example. 'Just because your device is configured to work at the public safety's 400mhz bandwidth doesn't mean it won't work on two or four other bands, so it can be used on other LTE networks.'

In Europe Alcatel-Lucent in partnership with Cassidian is focussing on the 400mhz bandwidth for public safety in order to make it easier for emergency services to adopt the technology, but Steve is adamant that the technology will fit whatever needs are outlined. 'For example while you are on route to an incident you could be using an existing commercial network because it is not overloaded as it could be at the scene. But when you get there you may find – if in a town – that the network is heavily congested or even switched off for security reasons. This is where a deployable network will come into its own, and the great thing is that it won't require a team of engineers to support it, it runs by itself. It really is possible to make a self-optimising and self-managing network.'

For ever TETRA?

Thinking about a network refresh today might seem anathema but when it comes to nationwide public safety and telecoms it pays to think long term, as Jose Sanchez de Muniain found out when he spoke with Tom Quirke of Motorola.

Short, medium and long term, as regards a private public safety network for the UK Tom doesn't mince his words. In the short term it's TETRA and TEDS, in the mid term it's TETRA and TEDS, and in the long term its TETRA and TEDS. The simple reason, says Tom, is that there is no standard being developed to replace mission critical voice communications – as currently delivered by TETRA.

A widely-accepted standard lies at the heart of communications because – to put it bluntly – without one there are no economies of scale, and without economies of scale there are none of the functions and capabilities that have become part and parcel of modern day emergency response.

If Motorola's R&D project list is as long as Tom suggests, then the full potential of TETRA is still to be unlocked. The next big step change is going to be data. 'A lot of end users will say, "right now I'm not sure about data because I'm running data through cellular, so I've voted with my feet", but over time we are seeing that changing as certain key applications become – if not exactly mission critical – then at least impacting on public safety delivery.'

Motorola is already preparing for the time when the importance of data increases for public safety, and in particular looking at how that data will interact with a private public safety network. 'Wouldn't it be nice if the multimedia data that was sent round a cellular network would exactly match a talk group? So if I changed talk groups, the multimedia direction flows also changed automatically? That is a clever bit of research and development and we have it on our roadmap on how to make it happen without impacting on quality of service or issues of priority which are so sensitive to cellular operators.'

Cellular networks being what they are, it is not inconceivable that a trigger event in the future – let's say a network failure - could highlight how much public safety has become reliant on data, and it is at that point that Tom predicts TEDS (TETRA enhanced data service) will come into its own. 'I think its inconceivable that people will do a network refresh in TETRA without having a TEDS capability as part of the process. Maybe not now, but we need to keep that option open. Base stations that are old don't have a TEDS capability.'

A fully functioning public safety data network could change the face of modern policing, unlocking a whole set of functionality that would bypass concerns over sending sensitive data over a commercial network. Pushing images of missing children to officers within a 10-mile radius and sending evidential images of domestic incidents to the station are all types of functionality that could be attained with reliability and resilience and which Tom believes will become the norm.

The other hot issue of the day is broadband for public safety, and there is much talk about LTE and its implementation in the USA. Closer to home, Tom is of the belief that the UK will have two networks, one for voice and data and another for broadband. 'Whether the public sector owns that network or not is another question. If we go down the route of a network privately owned by a public safety entity then it will almost certainly be LTE. This is because we are going to get the economies of scale coming from the USA, and the main driver for broadband is going to be the key application that is multiple live high definition video streaming. That is the one thing you are not going to get from TEDS.'

Motorola has made a significant investment in LTE, and has a partnership in place with Ericsson, who are providing the LTE platform for Motorola's LTE solutions. Having immediate access to live streaming may seem like science fiction to end users, says Tom, but the fact that LTE has been agreed as the relevant standard for public safety means that a big hurdle has already been overcome. The other hurdle however is spectrum, and if harmonisation isn't achieved in this regard then any economies of scale reached by an LTE-standard consensus will diminish very rapidly. 'That is why in the US we are very publicly advocating a 700MHz public safety broadband, and we'd like that to be harmonised across the world if possible. It won't be easy and if we look at Europe it is going to take a concerted, repeated and long effort to get there.' The US started a similar dialogue back in 2006 and it is still ongoing: 'We all recognise that in Europe it is a bit more complex, and whilst the European Union would be the coordinating point, the final allocation would have to be ratified at national level. It is important that public safety has a clear voice about what it wants and what it wants first.'

The dialogue has to start sooner rather than later, says Tom, because only by obtaining this bandwidth will the public safety organisations of the future be able to take advantage of functionality which today can't even be envisaged. After all, how many people involved in the Airwave roll-out could imagine the extent to which it is used today? 'Europe can be quite proud of its achievements in networks, because they are proving themselves invaluable when you have nationwide events such as the London riots, where police had to be brought in from other forces. This didn't create a problem because they were all under one network, and that level of built-in interoperability is phenomenal at ensuring an efficient public service capability.'

Tom Quirke would like to see a 700MHz public safety broadband harmonised across the world.

Responder or customer: what is it you actually need?

John Dexter and Richmond Edwards of QnetiQ outline a tried and tested approach that joins together the needs of end users, techies, suppliers and decision makers, thereby ensuring the best solution is found.

John Dexter has a Masters Degree in Electrical & Electronic Engineering from the University of Bristol. He has been working at QinetiQ since 2003 and is the Engineering Lead for the Information Flow Analysis capability. In this area, John has undertaken numerous analyses primarily for defence projects including the future aircraft carrier and future type 26 destroyer.

There is a great deal of debate on how end users can better define their requirements to enable their business. British APCO's vice president, Sue Lampard, made the following interesting points (British APCO Journal Volume 17 Issue No 1):

- Users don't understand technology – and what's available to them.
- Techies don't understand how the sharp end of the business works.
- Suppliers know what's out there now and for the future but get to talk to techies rather than users/decision makers.
- Decision makers don't understand much of all this.

So what is the way ahead?

Should we expect users to constantly keep up to speed with what technology is available to them and should techies (technologists) get a better understanding of what is happening at the sharp end? Our answer to those questions is 'not necessarily'. Our mantra is: 'When a user articulates their requirements they should neither be seduced nor constrained by technology.'

So what does this mean?

We are suggesting that users should express their needs purely in technology-agnostic operational terms – they should only specify what it is they need to do. They should not drift off into the 'how they want to achieve it'. That is what the technical designers are supposed to suggest. Too often users have been tempted to specify a solution ('solutioneering') which has ended up not being what they actually need, with subsequent costly upgrades/re-engineering and a detrimental impact on operations.

How do we achieve this?

If users do not solutioneer and technologists do not work at the sharp end, how do we bridge the gap between the user space and system requirement spaces while having a clear audit trail between the two?

Bearing in mind the two spaces are defined in different ways and are therefore not directly comparable, this makes it difficult to determine how much of the existing system satisfies the future requirement and therefore what we need to add in order to fulfil new requirements.

Information exchange requirements (IERs)

One method of bridging the gap between the two disparate entities of user and system requirements is illustrated in: 'Error: reference source not found'. This method uses the analysis of IERs defined by users to aid in the definition of user and system requirements. We define IERs as: 'an unconstrained user requirement for information exchange'. They are defined between a source and destination pair with attributes that define the type of service required to support the IER; confidentiality; how critical the IER is to the overall business; the type and size of the information being exchanged; and worst-case delivery expectations.

An important aspect of an IER is that users can directly specify their requirements by expressing what information they will need to send or obtain. The only technology specified is the type of service (such as a video/voice call,

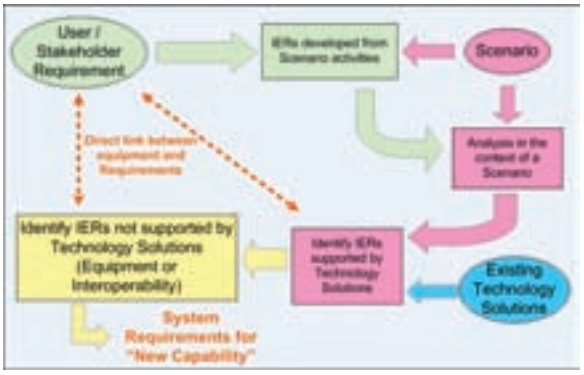


Figure 1: link between user and system requirements.

messaging, file transfer, etc.) the user requires to support their IER and subsequently the amount of data. The type of service is deliberately kept as generic as possible to keep the technology agnostic aspect of the IER.

Because an IER is defined between a source and recipient(s), there will always be at least two stakeholders for every IER. This enables cohesion between all stakeholders of an IER, as each IER defines part of their total requirement and at an information level guarantee information interoperability.

Technologists analyse the user requirements

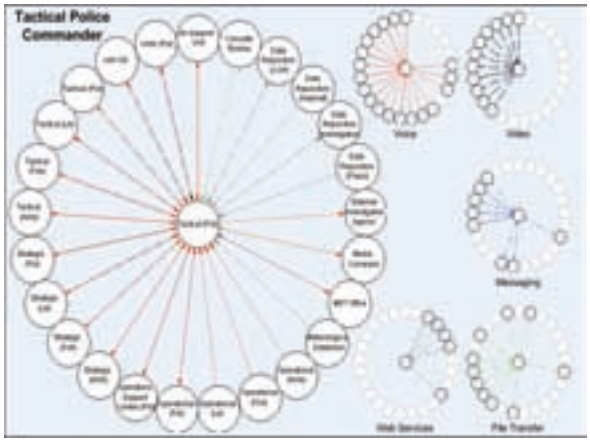
Using this methodology, the analysis of IERs enables the investigation of communications requirements and architectures. Much of the analysis is undertaken in a scenario to provide context and the ability to model worst

case situations. It is at this stage that technologists can begin to specify and refine their own requirements through the models, architectures and their technology specific solutions and IERs.

The analysis of user IERs is often challenging, but yields results that typically pose new questions to those asked. Inevitably, it provides focus on key areas to be addressed in subsequent designs of systems and models.

Reuse and continual improvement

Captured IERs are scenario agnostic, which means they can be reused in multiple scenarios. The IERs are defined between generic source and recipient actors. The IERs for a generic actor then represent that generic actor performing a set of generic functions for example, 'Error: reference source not found', shows a summary of the information exchanges that a tactical police commander (as generated to support Project SECRICOM – see case study below) may make in the course of a crisis situation (situation and role dependent). When placed in a scenario this becomes specific to that scenario depending on the various actors and the functions undertaken by each actor within the scenario.



This generic nature of IERs allows for continual reuse, review and refinement as a project progresses and analysis findings are reviewed. The result is then a set of IERs that can reasonably predict the requirements of a capability. The IERs, due to their scenario agnostic nature, can then be reused across projects as they are potentially capability independent. Projects can then build on the knowledge and experience gained in other projects.

The problem with IERs is that they are only accurate whilst the requirements for which they were generated remain valid. Invariably, requirements or designs change; this may lead to valueless IERs – IERs which do not satisfy any updated requirements. Similarly, the number of stakeholders/reviewers of the IERs should be maximised to ensure maximum validity and credibility.

To maintain a reliable vision of the capability, periodic reviews of the IERs are invaluable. This gives the opportunity to review existing IERs and identify gaps where requirements have changed. Periodic reviews ensure concurrency between the IERs and the project requirements, with updates of any modelling and analysis to verify the changes.

As shown in 'Error: reference source not found', the linkages between the output and the requirements ensure that this is a cyclical process which will ensure cohesion between the envisaged design and the IERs. Frequent reviews of the IERs should be done as the capability design matures. The number of times this could be done is unlimited, but should be undertaken at least twice:

- Firstly, to scope the capability in the early stages and focus early design questions, and;
- Secondly, before designs are finalised, to confirm the design is feasible and satisfies the user requirements.

Defining security and resilience requirements

During the design of computer networks, the risk to the network (ie confidentiality, integrity and availability) should be assessed. These assessments would be used to identify critical assets and locations where risk mitigation may be required.

Fields within each IER define the confidentiality, criticality and integrity requirement of the IER. These attributes can be utilised in risk management formulae to help focus the requirement for security and resilience.

Case study: Project SECRICOM

The need to quantify the difference between what users require and what technologies currently provide was a challenge faced in project SECRICOM (Secure Communications for Crisis Management), an EU FP7 project. We needed to determine the scope of the project on a pan European basis; this was the difference between what the responder community (users) can do now, and what their aspirations are for seamless interoperability across international borders.

This was a tall order and the search was on for a methodology to help us determine the scope of the delta and hence the scope of SECRICOM. We identified a tool set which had been used for a number of years to capture and analyse IERs in a military environment. It became apparent that the process previously used to identify the military IERs was not best suited to the SECRICOM project.

Working closely with our British APCO partner we developed a process which captured the key user requirements (KURs) for a crisis scenario ('Error: reference source not found'). Each KUR was then expanded into a set of operational objectives supported by a set of inter-relational activities. These activities were expanded into one or more IERs at a workshop with British APCO members from across the civil emergency responder community.

Once the captured IERs were reviewed the analysis was undertaken. The result of the short analysis was an indicative architecture requirement which confirmed many of the views previously held by first responders. This allowed the SECRICOM project to ensure it satisfied all

Richmond Edwards joined QinetiQ in 2005, after an extremely varied career in the Royal Navy as a Weapon Engineer Officer. He served both at sea and in various shore jobs at home and abroad; some of which were in a tri-service and international environment. Many of his appointments were related to communications of all types although his last job was as the Officer Commanding of the Counter Intelligence and Security Training Delivery Wing at the Defence College. In this post he became the lead trainer in Contingency Planning and Incident Management, working closely with the emergency services.

Figure 2: generic tactical police commander's IER (extract from SECRICOM project).

Figure 3: SECRICOM high-level KURs.

areas of the requirement and was achieved without the user group being asked to express any requirement in terms of a technical specification; only the need to exchange information between actors in the scenario to satisfy each activity was expressed.

The analysis demonstrated/re-confirmed the following:

- Voice remains the most significant information exchange method; however, other data types (eg data transfer) also emerge as prominent. This is specifically prominent in the tactical and operational levels where mobility remains essential ('Error: reference source not found').
- There exist special circumstances (eg advice from partners external to the crisis) where data exchange from sub-operational level units is a much needed requirement.
- From the IERs captured, a ratio of approximately 3:2 was observed between the total number of situational awareness and command & control-type IERs. The number of Command & Control IERs was higher than expected because of the duplication of IERs through an initial verbal command backed up with a confirmation data type IER. 'Error: reference source not found' shows the relationship between situational awareness and command and control in crisis management. It is important to understand this as a feedback loop, the efficiency of this being governed by the quality of the communications flow around the loop.
- In a complex crisis scenario involving multiple agencies, intra-agency communication was a significant proportion of the IERs, reflecting much of the internal agency protocols. However, a significant proportion of the total communication at every level of command was inter-agency. It should also be noted that in international crises these communications may need to cross international borders. Satisfying the requirements in this area was one of the prime objectives for SECRICOM.

Figure 4: crisis management process.

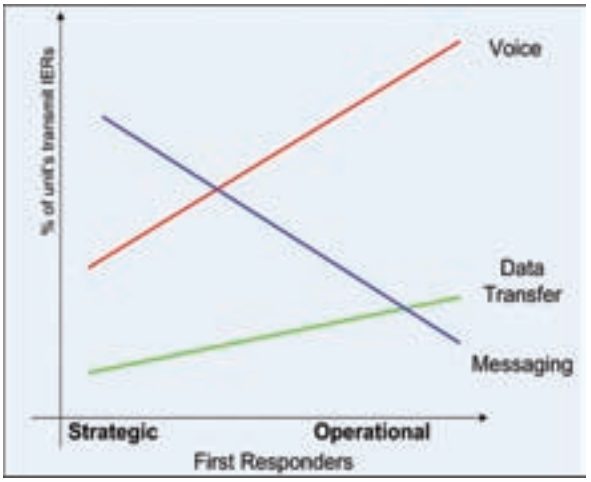


Figure 5 (top right): trend in IER data types through the command levels.

We stress that within project SECRICOM only a part of the scenario vignette was fully analysed; however, the vignette did exercise many of the captured user requirements. The other factor worth noting is that the major multi-faceted crisis scenario, in the project, does cross international borders meaning that it goes well beyond the remit of UK based crisis responders.

FiReControl: a contemporary case in point

To quote *Wireless* magazine (May/June 2011): 'What is the future for Fire Control in England?', there are some interesting points to note: 'The issues are now: how can we best utilise the legacy assets that are coming out of FiReControl' and: 'We (the Government) will work with the sector to properly define the national and local resilience'.

We believe that a comprehensive IER capture and analysis will provide a good indication as to what capability is required to support the user needs, and subsequently what the legacy assets can provide and can also help to define national and local resilience requirements.

Conclusion

To address Sue Lampard's comments and with an eye on the outcome of the FiReControl discussions, our methodology and capability allows:

- Users to specify their needs in terms of IERs which are technology agnostic, future looking and potentially highly aspirational;
- Technical designers to analyse and design, with the support of suppliers, a communications solution that supports the users requirements, and;
- Decision makers to make informed decisions and satisfy themselves that proposed solutions satisfy user requirements.

The way ahead

We believe that there may be a future role for British APCO acting as the honest broker between the user, technologists and suppliers. British APCO already has both user and commercial membership and could be instrumental in facilitating constructive dialogue and a clear audit trail between stakeholders in both the user and system space.

The very best headsets in an emergency

There can be few situations where there is a greater need for clarity of communications than in an emergency services control room.

When responding to callers who are often in an emotionally charged and sometimes distraught state, being able to hear what is said and being understood without repetition can save the vital minutes that result in a positive outcome for an unfolding crisis.

Sennheiser has a legacy of 65 years as experts in acoustics and audio technology. The German company has a global reputation for high quality headsets and microphones used in professional broadcasting, music industry and aviation, all of which demand high quality speech and audio. Using Sennheiser professional grade headsets avoids compatibility issues with existing equipment, reduces operator fatigue and diminishes the potential for confusion between the caller and operator. The Sennheiser professional headset range is approved for use with Sungard and APD control room systems and Sennheiser headsets have some unique advantages that provide significant advantages for control room operators.

For use in emergency control rooms one of the most important advantages of Sennheiser headsets is the company's patented ActiveGard technology. It's an unfortunate fact that emergency service control rooms suffer from malicious calls and usually these are simple false alarm. But there are also aggressive calls made with the intention of hurting and possibly permanently harming the control operator's hearing. Blowing whistles or using more sophisticated electronic devices to deliver an acoustic shock are rare occurrences, but can be devastating for the recipient.

ActiveGard technology embedded in all Sennheiser headsets detects unsafe audio levels and compresses the signal within milliseconds. ActiveGard doesn't just reduce, but rather removes dangerous energy from an acoustic burst, eliminating the distortion from an excessive incoming signal and keeping the volume of a sound peak at a safe and comfortable level to protect the users hearing.

For busy and noisy environments the high performance ultra-noise cancelling microphones used in Sennheiser headsets filter out unwanted background noise. The benefits to emergency control room staff of high quality sound and the elimination of external noise which are offered by sophisticated headsets cannot be overstated. The resulting improvement in intelligibility can greatly improve call efficiency, saving valuable time by reducing the risk of misunderstanding and average call duration.

Of course another key consideration for emergency control room headsets is user comfort. Sennheiser headsets excel in sound quality, durability and comfort which are essential in any environment where the user will have medium to heavy call usage. Sennheiser have looked into the ergonomics very carefully to ensure that its professional headsets are suitable for all day wearing comfort where operatives may be working from 8 hours a day or more in a demanding contact centre environment.

Sennheiser's range of SH, CC and the new SC family of wired headsets are ideal for use in emergency service control rooms. For those in a supervisory role requiring mobility in the control room, Sennheiser's DW Series of wireless headsets are the perfect solution, offering up to a 180 metre range (line of sight), 12 hours of talk time and fast charging, with 4 hrs talk time in just 10 minutes and full charge in 1 hour. Sennheiser headsets are available in a choice of monaural (single sided), binaural (double sided) headband and single sided ear-loop wearing styles to suit the needs of all users. Sennheiser has also invested heavily in research and development to ensure that headsets are optimised for simple installation and are simple and intuitive to use.

Free trials of Sennheiser headsets can be arranged for emergency service BAPCO members. To know more call 0800 1303955, or email info@sennheiser.co.uk or visit **www.sennheiser.co.uk**

25 years of communications

The past quarter century has seen a number of technological innovations that ensure the options and possibilities available to a public safety communications officer in 2011 are a world away from their 1980s equivalent. Chris Jones, CEO of PageOne Communications (celebrating its 25th anniversary) looks back over the years and discusses upcoming innovations in the field.

"Voice, email, instant messaging and even Twitter have a role to play in an integrated comms strategy."

Throughout the 80s and 90s, the public sector predominantly got on with the job in hand with the technology available, although to some extent they were forced to change certain working practices in order to get the most out of available options. Fast forward to the present day and technology has undeniably moved on leaps and bounds with solutions specifically designed for all manner of functions that are far more integrated and which better complement each other in the operational environment. So what has elicited this massive change?

For the emergency services, the sheer magnitude of the terrorist attacks of 9/11, the 7/7 bombings in London and localised natural disasters such as the Gloucester flooding in 2007 changed everything. These incidents forced a complete re-assessment of every aspect of emergency planned responses and in essence, the entire industry grew up overnight. These emergencies provided a real catalyst for change and emphasised the importance of interoperability and having resilient forms of communication in place that continued to operate when GSM communication was compromised. It was this that saw us develop 'Pulse', a dedicated emergency channel for blue-light organisations that guarantees priority and bandwith. Not only did this give paging greater flexibility but it also enhanced accessibility.

The requirement for resilient, interoperable comms, the ability to communicate with colleagues 'on the move' and to coordinate a response from a single point of command was integral to making the public sector workforce more effective.

Looking forward it is imperative that both product development and IT investment continues to be geared towards finding solutions to the challenges that the emergency services face. The demands on the emergency services today have never been higher. With the ethos of 'more for less' rippling through the heart of the public sector, it's no great surprise that any form of messaging technology that is to be adopted must be proven to either reduce costs or drive efficiencies. SMS is an inexpensive and efficient mechanism through which to broadcast short bursts of information. Therefore, new applications that make use of SMS – particularly those designed for public facing scenarios – continue to prove popular. In fact it is these applications which are designed to help trusts and public sector bodies to make cost and time savings that will deliver this growth.

However, when it comes to driving efficiencies, it's not all about SMS; voice, email, instant messaging and even Twitter have a role to play in an integrated communications strategy, depending on the application and criticality of the information. Take business continuity tools for example, whereby SMS, paging and email can be great channels for broadcasting short, timely messages with the intention to instruct and inform: yet voice is essential for occasions when tone or an immediate dialogue is required. Voice conferencing can also be used within business continuity applications and the ability to record a conference provides a valuabe audit trail, especially useful for the debrief period.

There is also a large appetite for making existing IT investments work harder by extending their use to cover further functions or into new departments. For example, many have begun using their business continuity solution for day-to-day messaging, finding it enables them to consolidate their IT systems while also reducing staff training costs.

Getting more specific, for Cat 1 & 2 responders the launch of the UK's first MTPAS-enabled 2-way responder continues to be the major innovation that is having a positive impact on the ability of emergency services to co-ordinate an effective response. By combining the tried, tested and trusted benefits of paging with the additional capability to acknowledge and respond, it has reinvigorated the paging market for the 21st century.

For non-Cat 1 & 2 responders, I believe smartphone applications which extend the functionality of existing staff devices will become increasingly popular. Many workers now carry around a BlackBerry or similar device to receive routine operational updates and it therefore makes little sense to also carry around a second piece of hardware to handle critical communications. However, there is a danger that vital messages will be lost amongst the sheer mass of other emails. This is why we have developed a more extensive application for smartphones to directly address this challenge. Featuring a dedicated inbox and alerts for key messages, it fulfils this requirement while negating the need to manage future software upgrades or invest further.

Nobody can say with any degree of certainty what the next quarter century will bring or of the next major innovation that will transform our working lives. However, my experience of the last 25 years is that whatever it is, it will directly address a key industry challenge that users are already facing and enable them to be more efficient. Feedback from those out in the field will almost certainly sit behind the next breakthrough development and will help shape future endeavours.

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