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Information management for civil contingency responders

# BAPCO

Journal

Volume 15 Issue No 4 • July/August 2009 • £3.50

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Why interoperability will not be easily achieved

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## ➤ Red Cross Disaster Challenge

The Red Cross is running a Disaster Challenge event September 11-13 in which a hypothetical disaster unfolds in real time that will challenge entrants' ability to think under pressure. Those involved will be taken out of their comfort zone and into an environment where decisions they and their teammates make would be a matter of life and death in real life.

The role of the Red Cross Emergency Response Unit (ERU) is to respond as quickly as possible to a humanitarian disaster whenever and wherever in the world it occurs, offering practical help and hope to people in crisis. The Disaster Response Challenge provides a unique opportunity for people to experience, first hand, the issues and decisions faced by



the Red Cross ERU in a disaster situation – something that only a handful of people get to experience in a lifetime. The Disaster Challenge is run by members of the British Red Cross ERU, experts in Disaster Response

logistics and experienced professional trainers specialising in personal development and team building. For further information visit the website <http://www.redcross.org.uk/disasterresponsechallenge>

## ➤ President's address

It hardly seems like yesterday that I sat down to write my first column for the journal, immediately after our conference. However, time has moved on and, as ever, things continue to change. I would offer my congratulations to our President Elect, Andy Trotter, on his recent and well deserved appointment as Chief Constable of the British Transport Police. Understandably, but nonetheless regrettably this appointment means that Andy will be unable to take up the role of President of BAPCO next year and has stepped aside. Clearly our loss is BTP's gain. Heydon Newton, our Vice President has kindly agreed step up to the Role of President Elect and take on the role of President in 2010.

The aforementioned changes serve to remind me that BAPCO is a member led organisation established to represent the Public Safety user community. The organisation is predominantly made up of users and suppliers with a very, very small team of paid staff supported by an executive committee of

volunteers. As an organisation BAPCO is dependent upon the commitment of members to volunteer their time, skill and energy to bring the organisation to life. If BAPCO is to continue to become more influential and represent users effectively, we need to be able to identify and draw upon the goodwill and skills of the membership to represent BAPCO in the increasing range of committees, working groups' consultative fora we are becoming involved with.

Recognising the undeniable pressure on people's time we need to recognise that alone, BAPCO's ability to advocate on behalf of the user will be constrained by limited capacity. Therefore, we need to actively develop and embrace partnerships and alliances with other organisations in order to build capability and capacity. In developing such partnerships we must recognise that each partner needs to bring something different to the partnership; sometimes it may be appropriate for BAPCO to lead but, we must be equally willing to

play a supporting role. Our partners are unlikely to always share all of our principles, aims and objectives but that should not in itself preclude partnership so long as there is a relevant shared interest.

These thoughts on the future are my own and do not necessarily reflect the views or indeed, discussion within the Executive committee. However, I hope that they will serve to stimulate debate, not only on what BAPCO should be doing but also on how we are able to deliver our aspirations. Like all organisations, in order to survive difficult times, BAPCO needs to consider how it can deliver more for less and make the very best use of the assets we already have.



*Olaf Baars, President.*

## ➤ Westmeath harnesses Juno GPS for hydrants

Irish Fire Authority Westmeath has swapped old paper based data collection methods for a new Trimble Juno GPS data capture system to increase the quality and accuracy of the information it gathers and stores on the county's fire hydrants.

As part of a Pre-Fire Plan, Joe Cassidy, Assistant Chief Fire Officer at Westmeath and Paul McLoughlin, Full-time Station Officer in Mullingart, are responsible for recording and maintaining the county's fire hydrant data. Joe Cassidy explains, "As part of our Pre-Fire Plan we are currently identifying the location of all hydrants in the county with a view to creating a database of information for each



hydrant with critical data such as type, flow, and water pressure – all vital information for our action plan. Previously we were capturing these details on a paper hard copy but this limited the amount of descriptive information we could record and made working on wet and windy days extremely difficult.

"We were already aware of the benefits that GPS could bring to our survey but were initially disappointed at the performance of an early system we trialed that delivered location only and was not user friendly. We therefore decided to contact KOREC, Trimble's UK and Irish distributor of Mapping Systems, and following a consultation selected a Trimble Juno."

## ***Nortel-Siemens-Avaya-Mitel Pilot Touch Screen Telephony***

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## ➔ Icon Award for Surrey Police

Intergraph's Icon Awards, which recognise exceptional application of geospatial and enterprise engineering technologies, has been awarded to Surrey Police

Surrey Police received the Icon Award during the opening keynote ceremonies of Intergraph 2009. To increase the effectiveness of the 999 emergency call system, Surrey Police sought to expand call handling with a customer contact centre. Surrey Police chose Intergraph public safety incident management and reporting solutions, which protect 1 in 12 people in the world, to aid in the development of the centre which answers 36,000 calls per month. Since implementation last year, the department has experienced significant reductions in call numbers per crime reported and efficiency savings.

## ➔ Super secure USB encryption



ESM has launched a new super-secure X-wall Files portable hard drive, a high-security USB device that boasts military-grade encryption to keep its confidential contents safe, whether in the office or on the go. The device is equipped with the latest technology designed to protect Data-at-Rest (DAR) and the X-wall Files device provides users with military-grade, hardware real-time full disk AES encryption, without any performance loss. Gerry Holman, ESM, said: "The X-Wall Files USB drive is perfect for anyone who needs to be absolutely sure that their data is protected from disclosure at all times, such as those working in law enforcement."

## ➔ NPIA publishes Guidance on Interoperability

The National Policing Improvement Agency (NPIA) published its Guidance on Multi-Agency Interoperability having worked with staff from the Police, Fire and Ambulance Services to support the introduction of common practices and procedures to prepare front-line staff for the advances in communications interoperability.

The NPIA wrote to the BAPCO organisation to thank them for their input in helping put the guidance together saying: "Many people from the emergency services and responding agencies took part in workshops, consultation and reviews, to

ensure the Guidance is both technically and operationally acceptable. We are keen to let you know that the input we received from all those of you involved was widely appreciated, not only by the team, but by the chief officers associations and government departments represented on the Programme Board.

"The Guidance has been published on the NPIA website and will have links to it from other websites, demonstrating its wide support. Indeed, it is worth noting the organisations who have added their signatures to the Guidance include the chief officer groups

(CFOAS, CFOA, ACPOS, ACPO, DH, Scottish Ambulance Service and Scottish Resilience) as well as CLG, DoH and the Home Office."

The team is now working to develop standard operating procedures that will concentrate on optimising use of the Airwave radio network for same service and inter-service communications.

These will need to go through a similar consultation process to the Guidance, and the NPIA is hoping BAPCO and its members will be willing to assist them with that as well. To download the Guidance visit [www.npia.police.uk/en/13291.htm](http://www.npia.police.uk/en/13291.htm).

## ➔ Merseyside Fire awards telent five-year contract

Merseyside Fire and Rescue (MF) has awarded a five-year contract to telent to support and maintain ICT systems. This service has been provided by telent to MF since 2001 and the contract was re-awarded following a competitive tender.

Under the new agreement telent will provide a comprehensive range of maintenance services to MF in addition to implementing key technology refresh programmes. Services provided by

telent are delivered in accordance with ITIL and include a year round ICT support desk, maintenance, network design, project management and contingency disaster recovery planning.

Through the previous contract, telent supported MF's objective of improving service through new technology cost-effectively, and recently installed a brand new Voice-over-IP (VoIP) system to replace the Service's analogue stand-alone telephone switches.

Networked, multi-functional IP switches now allow digital telephony across 30 MF sites.

At a ceremony held in Liverpool to mark the signing, Kieran Timmins Executive Director of Resources at MF said, "I am looking forward to continuing to work with telent, using the latest technology to make the people of Merseyside safer, preventing operational incidents in the first place and responding efficiently when they do occur."

## ➔ ES in Coventry

The Emergency Services Show is back for the fourth year running and once again the event will take place at Stoneleigh Park in Coventry, November 24/25.

The show provides all organisations involved in emergencies with access to the latest cutting-edge technology, a unique opportunity to network with like-minded professionals and the chance to share industry information. The exhibition features three distinct parts in which over 300-specialist suppliers and service providers are based, the Networking Zone, the Emergency Response Zone and the Blue Light Zone.

## ➔ Storacall portable monitoring

Storacall has announced the launch of its VoiStore Portable Recorder and player, which is designed for portable telephone and radio surveillance monitoring for the military, security and surveillance markets.

The recorder consists of a rugged portable PC fitted with one or more multi-line communications recording cards together with a 14-inch TFT active matrix color display. The recorder can record analog, digital, ISDN, VoIP and radio channels as well as allowing the creation of hybrid systems. Generally overall capacity is 96 channels of analogue or digital or 240 channels of ISDN comms.



## ➔ Cambridgeshire FRS hosts geo event

Fire and Police Officers from across the country gathered at Cambridgeshire Fire and Rescue Service's (CFRS) headquarters in May to discover how the latest software from GGP Systems is helping to revolutionise the provision of back office services, while reducing costs and achieving gains in operational efficiencies.

Representatives from over 15 organisations were taken through the Service's selection, procurement and implementation process before being given the chance for hands-on demonstrations of GGP Response – a suite of award winning gazetteer management and geographic information software specifically developed for the Emergency Services by GGP Systems.

The seminar, which included presentations from Tracy Raby, Head of Performance and Planning and Nicola Smith, Business Information Manager at CFRS, highlighted the pioneering adoption of the National Land and Property Gazetteer (NLPG) as its primary source of property and building information.



"By working closely with other services we hope to share our experiences, demonstrate best practice and even let others learn from the mistakes we may have already made," commented Jackie Watson, Project Support Officer at Cambridgeshire Fire and Rescue Service. "This event was designed to demonstrate all aspects of the project from the point when we decided to adopt

the NLPG and the realisation that our current software and operating processes were simply not up to the job right through to the selection and ongoing implementation of GGP Response. During this process we came to realise the importance of partnering with a single supplier for all our spatial requirements in terms of cost savings, support and future development needs."

## ➔ EC supports data loss reports

The European Commission and the European Parliament (EP) have announced their support for EU and national legislation to require telecommunications companies and Internet Service Providers to inform affected individuals and the regulatory authorities when they lose personal data or have it stolen.

The EP advocates going further and imposing this duty on all sectors. A recent survey by Privacy Laws & Business revealed that out of a sample of 21 national Data Protection Authorities (DPAs), many support strengthening their national data protection legislation to tackle lost and stolen personal data, often known as data breaches.

All those DPAs which support either introducing new data breach legislation or amending their current laws accordingly, support the view of the European Parliament that any data breach law should cover all sectors and not be restricted to telecommunications providers and ISPs.

## ➔ FiReControl project now at "tipping point", says EADS

EADS has described the FiReControl project – which will replace 46 local fire control room centres with nine resilient Regional Control Centres – as being at a "tipping point."

"The four sections of the system – the technology, the processes, the people to operate these processes and the data – are all coming together," said Oliver Yuledon, EADS Business Transition Manager, at a recent press briefing.

Yuledon said that there was now a big push to collect all the inert data about the assets (e.g. fire trucks) held by all fire brigades in England and Wales.

Asset information is key if FiReControl's nine regional

control centres are to efficiently allocate resources to incidents.

Each of the nine RCCs will be fully networked to enable flexing of call handling and mobilisation capacity to cope with local peaks in demand, largely eliminating call queuing. If one RCC fails, any call handling will be seamlessly taken up by the remaining eight RCCs.

The second stage of the data collection, explained Yuledon, will involve the collection of data of how each individual brigade responds to different incidents (its operational processes), followed by the integration of this information into the network.

The kind of information that

EADS intends to store in the network could be as detailed as outlining the length of a ladder required for a particular incident, or as specific to local knowledge such as the best location to place a ladder to gain access to railway a line.

"This type of information is often not held anywhere but someone's head. But we are confident it can be included in the FiReControl system – however many layers of data are needed," remarked Yuledon, adding that EADS was working closely with Fire Authorities on how they wanted their resources deployed.

However, it is understood by *BAPCO Journal* that even at this

advanced stage of the FiReControl project, there are still question marks as to precisely how individual fire brigades will command resources once they have been deployed by a Regional Control Centre.

EADS continued that in terms of computer hardware, servers, video and audio equipment had now been delivered to the three RCCs in the first wave in 2010 – South West, East Midlands and Northeast.

"The next job is to plug it all in together. We are also installing mobilising equipment in over 60 fire stations, and mobile data terminals are being installed in all fire cabs by Firelink," explained Yuledon.

# '09 TETRA World Congress



*TETRA World Congress took place 26-29th May in Munich and BAPCO Journal went along to find out the latest developments in all things TETRA. Here are some of the gadget highlights.*



*Sepura's STP8000 after withstanding temperatures nearing 400 °C during testing conducted by SINE, the Danish public safety network.*

*The next TWC will be held 24-27th May 2010 at the Suntec Singapore International Convention and Exhibition Centre, Singapore. For more information visit [www.tetraworldcongress.com](http://www.tetraworldcongress.com). TWC 2010 will be co-located with the Critical Communications Congress, which will focus on technologies for mission critical mobile communications above and beyond TETRA (see [www.criticalcomms.com](http://www.criticalcomms.com)).*

Over 2,600 attendees from all over the world, 181 speakers and 102 exhibition stands made TWC a successful event. The show coincided with the roll out of the German TETRA network, BDBOS (the world's largest TETRA network to date), meaning there was plenty to talk about for all visitors.

## Airwave

Following international recognition of achievements in the UK, Airwave announced the foundation of a Hamburg-based operation form which it plans to develop new business opportunities in what will be one of the largest TETRA networks in Europe.

Airwave plans to work closely with local German partners to deliver technical and operational consultancy services as well as a portfolio managed service solutions for the 16 Lander regions. "We hope that our unique experience and expertise will be of value in Germany, helping to ensure the country's national system is delivered on time and to quality and budget," remarked Chief Executive Richard Bobbett.

## Repeaters

Innovation in repeaters was a strong theme during TWC, with two companies launching innovative products.

Wireless coverage specialist Axell Wireless launched a digital TETRA SDR (software designed radio) repeater. The CSR438 digital channel selective repeater aims to provide quick, cost effective and secure radio coverage in any TETRA radio, and is designed to easily expand a base station's service area by filling in coverage gaps caused by terrain, buildings or tunnels. Axell CEO Ian Brown explained that while traditional hardware-based radio devices limited cross-functionality and could only be modified through physical intervention, SDR enabled new wireless features and capabilities to be added to existing radio systems through software upgrades rather than through a hardware upgrade. "It provides an adaptable platform that allows networks to be reconfigured rapidly to match new service and technology standards including the TETRA enhanced data system (TEDS) due to be launched later this year."

Finnish company Creowave launched its Hybrid repeater, also designed as a solution for extreme environments.

The Hybrid Repeater has been designed for present and future coverage enhancement solutions – and Creowave believes this technology will be viable after ten years.

Creowave TETRA hybrid repeater can be updated in the

field, reflecting the future radio channel allocations and continuous network development.

## EADS

On show was EADS's new THR9 radio – a tough product with IP55 water/dust resistance and with DMO repeater functionality. Other features of the new THR9 include high battery capacity, Java MIDP 2.0, XHTML browser and integrated GPS receiver, all designed to be compatible with the Taqto smart terminal management tool.

A new mobile radio, gateway and repeater was also being launched by EADS – the GR990. Again compatible with EADS's Taqto management tool, the TGR990 can operate in three modes – as a radio, a gateway between trunked and direct mode operation, and as a DMO repeater.

## Motorola

Motorola staff were all abuzz about the fact that it had now shipped over one million TETRA terminals to customers in over 90 countries – and they were convinced the new launches would help achieve million number two.

The MTP850S portable TETRA terminal for mission critical communications is based on the MTP850 model, with additional enhancements. The key safety features that the MTP850S incorporates are: "man down"; emergency button that alerts colleagues to critical situations and updates the officer's location; and standardised 12-pin side connector to ensure audio accessories remain connected at all times, even during violent altercations.

Motorola was also celebrating that it had won two tenders in the UK – Sussex Police and Cheshire Police – with TETRA radio devices (the MTP850 and the MTP800E).

## Sepura

On the Sepura stand celebrations were also in order, following its first major order for TETRA radios for the state of Bavaria – the fourth German federal state to select Sepura radios within the roll out of the German TETRA BOS-net framework. The contract win for 7,800 radios (STP8000) and SRG3500 gateways was achieved in close cooperation with its German partner, Selectric Nachrichtensysteme GmbH.

The SRG3500 vehicle radios' gateway functionality means they act as relay points for both hand-held and other vehicle radios, extending the trunked network in areas of limited coverage – the exact scenarios expected during the BOS roll out.



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## A byte out of the Big Apple: lessons for the UK?



*The US Department of IT and Telecommunications awarded the \$500 million contract to Northrop Grumman in 2006.*

*The New York City Municipal Wireless Network has been officially launched and is operational over a 300 sq mile area. BAPCO Journal speaks to the network suppliers IPWireless and Northrop Grumman to find out if any lessons could be learned for the UK.*

The five-year contract to deliver the mobile broadband municipal network was awarded by the New York City's Department of Information Technology and Telecommunication (DoITT) to Northrop Grumman. The New York City Wireless Network (NYCWIn) is widely regarded as an industry breakthrough in mission-critical municipal deployments. Northrop Grumman was the prime systems integrator for the project, responsible for the network design, deployment, application integration and on-going operation and maintenance.

IPWireless supplied the radio base stations and modems to Northrop Grumman as well as supporting the radio planning and testing throughout the city, providing a solution that was aligned to public safety as well as the needs of other city agencies.

A major challenge of the project was its deployment – installing 400 sites on roof tops throughout the city in order to attain a uniform coverage.

What makes the wireless infrastructure particularly special is that it can be used for a number of

applications, from broadband multimedia for emergency response to continuous monitoring of critical utilities and traffic control.

Different applications are being used by different departments – the police are focussing on mobile data for their vehicles, while fire and ambulance are focussing on their command and control vehicles. Municipal departments, for example, are using automatic vehicle location to track the movement of waste disposal vehicles to ensure they are on the right routes.

Tom Afferton, Director of Wireless Engineering for Northrop Grumman's Information Systems Sector, explained that while public safety was one of the primary drivers for the project, New York was also looking at value for money – explaining the multi-agency aspect of NYCWiN. "For example, the department of transportation is now moving to wireless connectivity for all its traffic signals, thereby avoiding paying for leased line."

So what can the UK learn from New York? Afferton

believes there are two main messages. "Resilience is important. One of the motivating factors for the City was that in numerous emergencies, commercial networks have proven to not be reliable, either because of lack of power or because the networks would get overloaded from consumers."

As New York's use of data had began to shift from "nice to have" to critical, the City recognized the increasing risk of dependency on commercial networks.

Afferton hopes to bring to the UK the concept of broadband in a resilience-dedicated network and to a multi-agency scenario – the second part of his message. "We recognise that a large part of the challenge is bringing together multiple agencies together," but that it can be done can now be seen in New York.

Keith Dewar, VP EMEA Marketing for IPWireless, adds that many digital adopters are now looking at what New York is doing and how it is working. "One of the things we know about public safety is that it is very conservative. But New York is an important proof point and as a result it is now starting other projects."

### Culture change

Now that the hardware and software is in place, New York's emergency responders are undergoing culture change, remarks Afferton.

"We are seeing it with video because the system has the bandwidth to support video and the system opens up the capability to share live streaming between agencies. Fire departments can potentially get access to police footage from a scene."

Recent examples of IVS deployment include Operation Safe PATH 2009 – a full-scale, multi-agency exercise to test the City's and the Port Authority's response to an Improvised Explosive Device (IED) detonation on a New Jersey-bound Port Authority Trans-Hudson

(PATH) train – and US Airways Flight 1549, which ditched into the Hudson River last January. In each case the IVS was mobilized at the incident scene, enabling first responder command units to stream video back to the City's Emergency Operations Centers.

Afferton adds that an important benefit of IPWireless's technology is its ability to prioritise network usage and applications eg between building inspectors and emergency responders. "That was fundamental to our success in New York, where we installed a prioritisation scheme system."

### Broadband trial

In 2007 the NPIA carried out a public safety network trial in Lewes (Sussex) with Sussex Police, NextWave IPWireless, and Northrop Grumman, using the same technology as in New York.

During the trial, the Sussex Police used the mobile broadband network to successfully transmit streaming video from fixed positions, from body-worn apparatus, and from moving vehicles, tested at extreme pursuit speeds, to the command station at police headquarters.

The Sussex Police created simulated crime scenes to gauge how well the mobile broadband network could serve the police in "real-life". The trial also showed that forensic evidence could be transmitted from the crime scene to the command station very quickly. Although the Lewes trial was a success, thereafter the NPIA moved its focus towards commercial mobile data.

"Which is great in getting terminals into the hands of officers but the point of our trials is that you cannot rely on commercial networks. But this is yet to be addressed."

With New York now fully operational and the UK's mobile data project at an advanced stage, perhaps now is the time to re-address mobile broadband.

### What the network provides

The network provides first responders with high-speed data access to support large file transfers, including fingerprints, mug shots, city maps, automatic vehicle location, and full-motion streaming video.

A fully-interoperable, IP-based network, NYCWiN enhances coordination by linking first responder personnel, on-scene, wirelessly with incident managers at remote sites through real-time data and video feeds.

Municipal applications, including automated water meter reading, traffic signal control and handheld inspectional programs are now planned or underway, allowing New York City's mobile workforce to not only to function more efficiently, but also to realise substantial cost savings across participating agencies.

The City is also looking to deploy an automated vehicle location system for hundreds of vehicles across more than a dozen City agencies.

This effort will help meet Mayor Bloomberg's PlaNYC goals for improved sustainability by decreasing vehicle usage, improving gas consumption, and providing

real-time management of the City's vehicle fleet.

### The challenge

The system needed to deliver mobile, multi-megabit service across more than 300 square miles of glass and concrete, and through 5,800 miles of roadway. The service had to maintain performance across all its sectors, without degradation when under heavy loading and incident testing.

The infrastructure also needed to provide real-time multi-media applications such as streaming video.

The solution also needed to be based on a single integrated infrastructure, facilitation communication between municipal entities, and containing costs by decommissioning leased-line services.

### The solution

IPWireless used its V5 Multi-Standard 3GPP Mobile Broadband platform, powered by TD-CDMA technology. The network consists of approximately 400 cell sites spanning all five New York boroughs, using licensed 2500 MHz spectrum to provide citywide coverage.

The TD-CDMA is equipped with low-latency mechanisms to deliver prioritised and preemptive network access to specified users and groups (eg emergency response personnel).

### Technical advantages

- N=1 Frequency Reuse, which enables the entire network to be deployed using a single 10MHz TDD channel, lowering spectrum acquisition costs and making large-scale networks cost effective.
- Intercell Interference, which facilitates interference cancellation between adjacent cells, supporting larger cell sizes and higher data rates at the cell edge.
- Per-sector performance: delivers higher sector capacity and simultaneously number of users than competing technologies. Dynamic scheduling of radio resource to match user instantaneous throughput requirements.
- Integrated Security: restricts network access through the use of licensed spectrum, multiple layers of user authentication and quality of service/tier of service compatible with end-to-end encryption of user data.

# Bringing law and order in storage for Greater Manchester Police

*How to meet growing storage needs and improve data resilience without adding IT complexity was the challenge for Greater Manchester Police. BAPCO Journal examines how NetApp's solution helped Greater Manchester Police's IT staff to design the system, identify and remove performance bottlenecks, and manage data migration.*



*"The demand for storage, especially from applications such as ANPR and CCTV, is growing but general storage is growing too."*

➤ *Andrew Gorton,  
Systems Planning  
Team Leader,  
Greater Manchester  
Police.*

Law enforcement is by no means immune to the trend toward more electronic storage of critical data. Greater Manchester Police (GMP) expects its data storage requirements to grow at between 10 and 20 terabytes a year over the next few years, driven by applications such as ANPR (automatic number plate recognition) and CCTV, as well as scene-of-the-crime information and other audio and video records.

In addition, the force has a tapeless backup environment and has 30- and 90-day retention windows for critical information. Users' data from the force's 7,400 desktop and 1,500 laptop PC systems are also held and managed on the central storage systems, rather than on local drives. At the same time GMP is seeing growth in the structured data produced by its central business systems. "The issue for us was capacity management and storage growth," says Andrew Gorton, systems planning team leader in IT at Greater Manchester Police. "The demand for storage, especially from applications such as ANPR and CCTV, is growing but general storage is growing too."

GMP needed to increase its immediate storage capacity as well as futureproof its systems to allow predicted storage growth. The organisation wanted to further consolidate its storage without adding additional layers of complexity to the IT department's work.

But at the same time, GMP wanted to improve its data resilience and business continuity arrangements. The

force had already made a strategic decision to use NetApp as its supplier for storage systems. So the organisation wanted to build on that, but ideally also allow systems administrators to continue to use familiar tools to manage storage capacity across both the force HQ, and the business continuity site.

However, GMP also wanted to remove some specific bottlenecks in application performance and improve both uptime and storage utilisation. As a further challenge, the organisation had both recovery time objectives and recovery point objectives that were, in effect, zero.

GMP opted to add to its existing NetApp environment by buying additional clusters. Bringing new capacity on stream allowed the organisation to make use of both high-performance Fibre Channel disks and cheaper SATA arrays within the same storage framework. In addition, NetApp's architecture allowed the IT department to mix both network-attached storage (NAS) for file-based data and a SAN (storage area network) environment for block-level access on the same physical infrastructure. Adding to the NetApp infrastructure allowed GMP to continue to use its existing SnapMirror and SnapRestore software, already familiar to IT staff, for business continuity and backup and recovery. "The infrastructure is now more resilient and more available," says Gorton. "We are moving to even tighter service-level agreements, and this will help us to do that."

The force brought in NetApp's Professional Services team, both to help design the upgrades and manage the transition. A key part of the process was transition planning and providing GMP with sufficient new capacity at the right cost. The consultants used NetApp's Performance Adviser tool, as well as trend analysis, to improve system design.

The NetApp team was also able to relieve pressure on existing systems by identifying where data could be moved to the lower-cost SATA systems, and by identifying and removing some specific application bottlenecks.

By separating the data paths for unstructured (file) and structured (block) data, overall application response times have improved. Some key operational applications, such as FIS, the Force Intelligence System, have a response time target of under two milliseconds, so even relatively small performance gains matter.

As a result of the upgrades, Greater Manchester Police has been able to improve both system performance and resilience, quickly and at an affordable cost. In addition, the upgrade was carried out with the minimum of disruption, and the new systems need little in the way of additional management tools.

Because NetApp SAN, NAS, and near-line backup systems use the same interfaces, the additional storage has not added significantly to IT staff workloads: One operator now manages some 100TB of data.

Application performance has increased, as has storage utilisation. Capacity is used more efficiently, and the uptime for the NetApp environment is at least 99%. The organisation has also been able to meet its business continuity requirements, especially the specific retention periods for each class of data.

In addition, Greater Manchester Police now has a dedicated staging environment that closely replicates the production setup. The staging environment is used to perform preproduction testing and performance benchmarking and to help new applications make the transition into the live environment.

A further benefit is that the force can use capacity on the second cluster in its business continuity site for application testing and development, improving application reliability and cutting deployment times.

Gorton says, "It has been fairly seamless, from the point of view of the end user; the outages have been minimal and we have even been able to undertake other technology refreshes at the same time."

NetApp FAS3050 clusters were augmented by FAS6040 systems to provide additional capacity, to allow a three-tier storage infrastructure, and to allow two identical systems to run across the force's primary and recovery sites. An R200 provides near-line storage.

NetApp Professional Services helped GMP's IT staff to design the system architecture, identify and remove performance bottlenecks, and manage data migration.



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# Interoperability – the holy grail of emergency response



*“Our experience in understanding and defining the interoperability needs of a number of organisations and situations has resulted in some simple best practice guidelines known as the ten Cs.”*

Richard Bobbett,  
Chief Executive,  
Airwave.

*It is well recognised that a co-ordinated emergency response relies on the ability to share information with the right people at the right time. Too often in the past, poor communication capability has hampered efforts to respond to major incidents. Richard Bobbett, Chief Executive of Airwave, explains how interoperability may be a simple and compelling concept, but implementation is less easy to achieve.*

The introduction of Airwave as Britain’s first and only national digital communications service dedicated to public safety responders means that a more seamless approach to interoperability is now possible.

But how should public safety responders make use of interoperable communication? What approach should be considered on a local, regional and national basis? What are the practical implications?

A two-pronged approach is required. First of all, the technical capability needs to be in place. Secondly, procedural and cultural issues need to be addressed.

## Technical capability – talk groups

To successfully interoperate, talk-groups (communication channels designated for particular users or events) must be correctly formed and managed. The 350 organisations using Airwave will have many talk-groups that they “own” and which are only available to them. They may allow other organisations to communicate

with them by giving access to their talk-groups – this is the recommended way of interoperating and gives flexibility for all situations.

It is well recognised that incidents may require communication between groups which do not normally work together. Airwave has planned for these situations by developing talk-groups specifically for inter-agency communications – IATs (Inter-Agency Talk-Groups) and MAMAs (Multi-Agency Mutual Aid Talk-Groups).

Each police force area has one dedicated IAT, available throughout the area served by that and neighbouring forces. Permanently enabled and available to every Airwave user, the IAT enables responders to talk to each other when required.

MAMAs are now available for use by organisations that work on a regional or national basis. Available nationwide to any agreed organisation, MAMAs are designed for joining up response to major incidents.

In addition, the police service has developed specific

### Case study 1 – prisoner escort

Sergeant Nick Shaw is one of three Nottinghamshire Police officers to complete the NPIA's TAC course, and he regularly puts the training into practice.

Shortly after attending the course he arranged the Airwave communications between officers involved in a high profile prisoner escort across three counties.

Before Sgt Shaw and his colleagues were made aware of the interoperability capabilities of Airwave, they would have been involved in making complex arrangements to communicate with each other and the force areas through which the convoy was to pass.

However, by putting in place talk-groups for specific groups of officers involved in the operation, all were able to communicate seamlessly and effectively.

Sgt Shaw said: "The course really helped to raise awareness of what was possible in terms of the flexibility of Airwave to communicate in different ways with different groups. In the case of the prisoner escort it meant that we were able to co-ordinate the operation more effectively, monitoring the progress of the convoy at all times."

### Case study 2 – major event

As one of London's biggest annual events, the Notting Hill Carnival presents a significant public safety issue.

The carnival takes place over an area involving two local authorities – the City of Westminster and the Royal Borough of Kensington and Chelsea. The introduction of Airwave has made it possible for the local authorities to interoperate during the carnival, using common talk-groups across and beyond the carnival area. The local authorities shared their talk-groups with one another and Brent Council invoked a MAMA (Multi-Agency Mutual Aid) talk-group so that they could inter-operate in case of emergency. This meant that they had many options to interoperate with each other and other public safety agencies such as the police.

"It was essential to know we could easily talk to each other across event and local authority boundaries without reliance on the public mobile network. This was valuable during routine event liaison across the local authority areas and we could also seek to involve other organisations such as the police if the need arose." Rob Walley, Civil Protection Manager, London Borough of Brent.



*The NPIA's TAC course raises awareness of what is possible in communicating with different groups via Airwave.*

talk-groups (police inter-service command and emergency services talk-groups) for interoperable communications at the scene of major incidents.

These are used to manage major incidents at silver and bronze command level, and are shared with the blue light emergency services and other partnership organisations.

In conjunction with the Cabinet Office Civil Contingencies Secretariat, Airwave has developed two talk-groups for use within each region as defined under the Civil Contingencies Act.

These will help responders work together during the response phase to an emergency. The talk-groups are open to all category one and two responders and partner agencies and access is managed through the Local Resilience Forum Telecom Sub-Groups.

Although the availability of these talk-groups is a major step forward, they will only prove effective if correctly managed. This means careful appointment and training of the personnel who can access the talk-groups.

### Working together

Because in recent times a large number of Airwave's 350 customer organisations have adopted Airwave in order to benefit from interoperability, we have formed an independently-chaired group that champions the issue on their behalf.

The MAAUG (Multi-Agency Airwave User Group) represents the needs of a large number of Airwave users who have similar needs. Its aim is to act as the interface between various Airwave users and Airwave Solutions to deliver quality assured training and to share information with other non-blue light public safety organisations that want to use Airwave and, potentially, interoperate.

Rob Walley, Civil Protection Manager at London Borough of Brent, and John Hetherington, Head of Civil Contingencies, London Borough of Waltham Forest, jointly chair the MAAUG.

### Tactical advisors

The National Policing Improvement Agency has taken a lead on the issue, setting up a specific team to encourage interoperability between forces. Their Force Operational Airwave Tactical Advisor (TAC) courses have proved highly popular, helping forces to set up the most effective communications during major incidents.



During the course, TAC advisors are informed of Airwave's tried-and-tested incident response process and are able to invoke detailed support. The TAC advisors can also advise how to access services such as extra radio handsets which are held by each force for use by other agencies in the event of a major incident, as well as Airwave's mobile base station and emergency response vehicle which can provide additional coverage. They are also trained in the use of different talk groups to enable them to set up effective multi-agency communications at the scene of an incident.

### Best practice

Achieving interoperability need not be a lengthy or difficult process.



*“Effective, resilient communications underpin multi-agency emergency response. Agencies need to continue to work together to ensure that their communications arrangements enable true interoperability – not only through technical means but also the procedures used in communication.”*

**Dr Nigel Brown,**  
Lead for Resilient  
Telecommunications  
Strategy,  
Civil Contingencies  
Secretariat,  
Cabinet Office.

Airwave works with a number of agencies which can assist in formulating interoperability arrangements: Emergency and Public Safety Interoperability Implementation Board (EPSIIB); Multi-Agency Airwave User Group (MAAUG); Defence Airwave User Group (DAUG) and the National Interoperability and Interworking Group (NIIG).

Our experience in understanding and defining the interoperability needs of a number of organisations and situations has resulted in some simple best practice guidelines known as the ten Cs.

### The 10 Cs

- Consultation – define and consult with Airwave the users you would like to communicate with. Airwave works with a number of forums so can assist in this area
- Co-operation – define mutually beneficial needs between various user organisations.
- Co-ordination – work together to understand the variances between organisation and agree when and how interoperability would be used.
- Communication – define the method of communication to be used. Airwave users have a choice of communicating using talk-groups, secure telephony or by connecting one radio to another specific radio, known as point-to-point.
- Compatibility – consider the compatibility of your systems and implications of any changes.

- Costs – define the costs (including the costs of not interoperating) and consider safety, time savings and efficiency benefits.

- Capacity – incident response draws in first responders from all areas. This means that there will be a need for more capacity than usual in any area. While Airwave is designed with surge capacity available for these situations, all responders must consider the capacity and efficient usage of the system being used when planning their communications. Efficient interoperability can reduce capacity requirements.

- Culture – interoperability cannot be resolved by technology. It requires consideration of cultures and the roles and expertise within each organisation. Training and exercises would be important if interoperable communications are to be effective.

- Critical debrief – a commitment to ongoing shared learning is important. Constant review and debrief of training exercises and incidents is required to continue learning and improving.

- Call signs – when communicating it is vital to correctly identify yourself. No nationally agreed standards are yet in place so the use of plain speak and adherence to agreed protocols is advised. When planning interoperability it is advisable to consider call signs in use by the organisations involved to ensure there are no duplications, and also consideration must be made for those users that have no call signs.

*In conclusion, interoperability cannot be resolved by technology alone – it requires consideration of cultures and the roles and expertise within each organisation. The Civil Contingencies Act requires responder organisations to work together. However, there can be frustrations when different organisations attempt to reach a common goal. These must be overcome to ensure that interoperability can be achieved.*

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# Maximising the intelligence cycle

*Peter Ship, a retired DCI and intelligence specialist at Memex, discusses why a joined up approach to covert human intelligence sources will give police more control over informants and the information they provide. Ship argues that the use of covert human intelligence sources should be an integral part of every day intelligence gathering.*



*"To become truly intelligence-led, agencies require a joined-up approach with an integrated intelligence system, which also includes a secure feed from their CHIS system of desensitised information."*

In the wake of the press coverage criticising police action in recruiting an informant, it is time to ensure that the worth of informants is fully understood. There are a number of areas in which the use of Covert Human Intelligence sources (CHIS) are an essential tool in intelligence led policing.

Many law enforcement agencies make use of informants as an important method of gaining information which is difficult or not cost effective to acquire by non-covert means. Because the use of informants is high risk there is strict governance of this activity and any informant management system must ensure strict compliance with the onerous Regulation of Investigatory Powers Act (RIPA).

In addition, the system must comply with the more general requirements of overarching legislation such as the European Convention of Human Rights. An example of this is the recent criticism of Strathclyde Police and the attempt to recruit an informant in respect of environmental protests. This criticism centres on "proportionality", a general requirement of Human Rights legislation. However given the preceding demonstrations at Aberdeen Airport and the violence in central London during the G20 talks it is likely that this test had been met.

## CHIS

The rigour of this regulation makes the use of CHIS (Covert Human Intelligence Sources) a lengthy process and agencies which fail to comply leave themselves open to failure. Traditionally, there has also been a difficulty in quantifying the value for money that informants provide, with forces unable to readily compare the amount of time and money spent on informant activity with tasks and results. This is a vital activity in the current culture of scrutinised public sector budgets.

I believe that while police informants remain vital in the fight against crime and terrorism there is a risk that their

use can lead to police becoming informant-led, to the detriment of other offences which may not receive the attention they deserve. For example, if officers are receiving high levels of good information about drug offences there is a possibility that they may work on this information rather than other crimes which may be of greater concern to the public.

## National Intelligence Model

Since the introduction of the National Intelligence Model in the UK, police activity has focused on intelligence based holistic targeting of problems. This approach drives strategy within police forces and if done well allows each force to identify emerging issues within their geographical area. The development and delivery of the Police National Database (PND), which is scheduled to be operational in 2010, will help this process through the provision of a secure information sharing system providing forces with immediate access to up-to-date information from other law enforcement agencies and government organisations.

In my opinion CHIS activity could allow police forces to be more strategic and intelligence-led if its use is enhanced. While it is clear that police informants are a major information gathering tool they are used in very specific areas, traditionally major crime and terrorism. I believe they should become a more integral part of a police force's wider strategic review. This would improve the understanding of the nature of crime in specific areas, especially those that are traditionally difficult areas to gather intelligence. An emerging priority for many police forces in the UK at the moment is "people trafficking", an area in which intelligence is hard to come by. Whilst I do not underestimate the difficulty of identifying and utilising informants in these developing areas of concern, a greater understanding of what is going on will lead to better prioritisation and resourcing.

Of course integrity of information and protection of the informants and their families will always remain at the heart of any CHIS activity, however I believe a fresh approach to the way intelligence systems are used is required. To become truly intelligence-led, agencies require a joined-up approach with an integrated intelligence system, which also includes a secure feed from their CHIS system of desensitised information. This together with more strategic tasking of informants will help provide police with the "true picture" on criminal activity in their area. The consequence of understanding the true picture is that informants can then be recruited and tasked in line with intelligence requirements, thereby creating a virtuous circle of intelligence gathering.

### Avoiding "CHIS Creep"

To enable source information to become an integral part of the Intelligence cycle there are developments in modern intelligence management systems which must be utilised to maximise the benefits. Informant Source Registers (ISRs) hold details of all people passing information to the police. An automated search of ISRs allows the identification of people regularly providing information. This allows proper management and prevents "CHIS Creep", the process which blurs the division between those members of the public reporting matters which come to their notice and the tasking of managed CHIS by trained handlers. ISRs can also be used to identify

potential CHIS with relevant knowledge or access to information when an intelligence gap is identified, an important part of the enhanced use of Informants.

To gauge the benefits and value for money of the proposed changes relies on easily accessible, quality, management information. This requires the ability to match requirements and tasking requests to information provided. Intelligence should then be tracked through the intelligence cycle into operational activity to its conclusion. This requires the ability to overcome the need to manage CHIS securely whilst allowing desensitised information to pass easily into the force intelligence system. Effective tracking requires automatic processes to run securely across both the CHIS management system and force intelligence system. The good news is that modern systems allow this secure interoperability and can automatically provide the relevant management information without compromising either individuals or methods.

### Conclusion

The use of CHIS should be an integral part of every day intelligence gathering and if used properly can enable police forces to see a fuller picture of criminal activity within their area. This will allow informants to be recruited and tasked into priority areas ensuring true intelligence led policing. This approach will mean police forces can readily justify time and money spent on informant activity whilst providing enhanced levels of service to the public.

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## DEMON breaks down the intelligence-sharing barriers

*The ability to share intelligence between different police departments is as vital to modern policing as the introduction of fingerprint analysis in the 1890s. Nowhere is the need to share intelligence greater than in protecting and securing our borders. Yet the effective sharing of video and hi-resolution images has presented major problems – until now that is.*

*West Midlands Police secured 11 convictions following Operation Siluga, which made use of software suite DEMON, says Scyron CEO Michael Wilks (pictured).*

**B**y any standards it was a huge case. The riots in the Lozells and Handsworth areas of Birmingham involved 271 crimes, 2 murders and a staggering 5,000 hours of CCTV and video footage. With multiple defendants and a complex array of evidence, senior officers at West Midlands Police described it as one of the most complex investigations they had ever undertaken.

But officers working on the case, known as Operation Siluga, had an ace up their sleeve when it came to extracting, analysing, managing and presenting the video evidence. It came in the form of a powerful software suite called DEMON, developed by a UK company, Scyron.

The technology, which was developed with input from

West Midlands Police, helped secure 11 convictions. After the trial, Superintendent Una Cooke, head of the Major Investigations Unit at West Midlands Police said: "Without this technology it was felt that the case would have lasted at least another three weeks and, also, that it would have been extremely difficult for the jury to be able to follow the evidence against the individual defendants."

During the investigation multiple officers using different computers were able to work on the same video material simultaneously, with total visibility of each other's changes. The system helpfully kept a complete audit trail of changes. Video bookmarks and any notes made by officers were automatically flagged up. "Think

of review changes to a Microsoft Word document but to evidential standards and transferred to video, and you get the picture," said Michael Wilks, Scyron's CEO.

Following the success of Operation Siluga, Scyron developed DEMON Manager – a complete digital evidence management system – which allows police officers to work simultaneously on the same source material, and share that material across the department's network, whether it be video, maps, digitised documents, etc. Currently, the technology is in use with a number of police services, in major incident units, counter terrorism and volume crime. A big plus for DEMON Manager is its ability to scale rapidly. This is a crucial factor in major incidents where extra clusters of officers may be drafted into an incident room at a moment's notice and set to work at a terminal.

In responding to police officers' operational needs, Scyron had inadvertently produced major elements of what security services and the military now refer to as a "situational awareness" system.

### Situational awareness

This latest buzzword is attracting a lot of interest in military and intelligence circles and from the likes of large software companies such as Microsoft. Yet, a quick trawl of the Internet reveals a confusing number of definitions. Put simply, situational awareness means being aware of what is happening around you to understand how information, events and your own actions and those of others impact your goals and objectives.

It processes four key elements (1) human, (2) important informational cues, (3) behavioural cues and (4) appropriateness of responses. For a fighter pilot this means being continuously aware of himself and his aircraft in relation to the dynamic environment of flight, any threats, and his mission goals, and then to be able to forecast and execute tasks based on that perception.

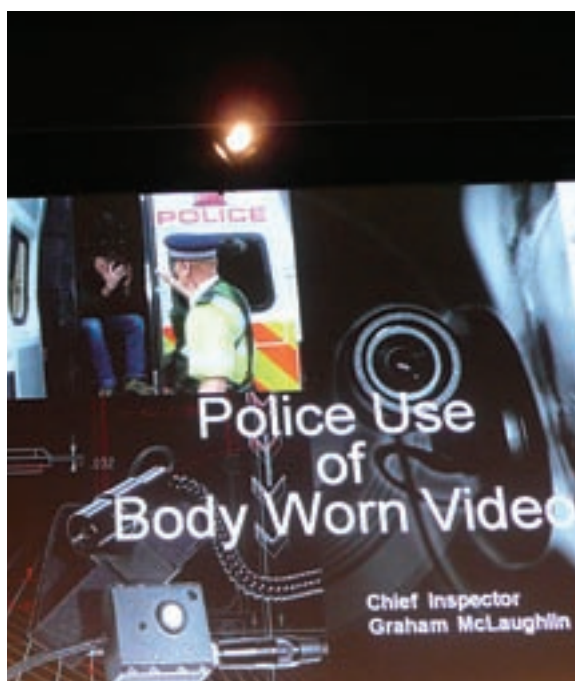
Although in use with the military, there are obvious applications for such systems in modern day policing. Complex investigations, like tracking down a serial killer spring to mind.

Thirty years ago such a system would have proved invaluable in the hunt for the Yorkshire Ripper. Its power would be in enabling officers to patch together information on attacks, potential and actual leads, suspects, locations, profiling information, etc.

While we are light years away from cranking the handle to deliver a prime suspect, in the Ripper case such technology could have enabled the police to pin point likely suspects or potential incident locations faster.

In the end, the serial killer Peter Sutcliffe was arrested in Sheffield after a routine inspection on his car revealed a false set of number plates. However, what the history books omit to tell is the extraordinary level of police manpower on the streets of Sheffield prior to his arrest. Studying his previous behaviour officers deduced that Sheffield was a potential future stalking ground for the killer. Yet this deduction only emerged over time and after the murder of 13 women.

The criticism levelled at West Yorkshire police eventually led to the development and implementation of the forerunner of HOLMES (Home Office Large Major Enquiry



*The DEMON system identifies and learns the format required for video playback by a requesting officer, and adds it automatically to the police service's DEMON library.*

System). The case proved to be a watershed and changed forever the relationship between policing and computing.

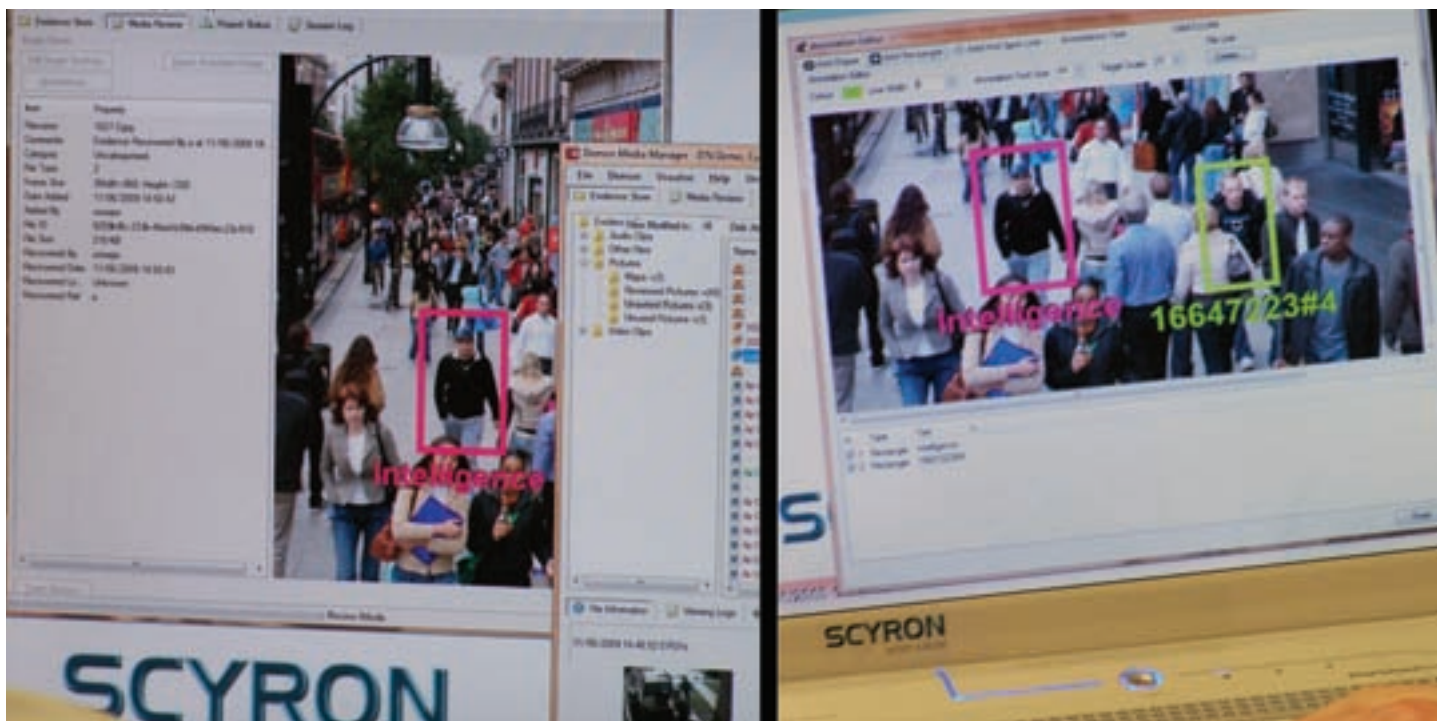
Today, information systems are an indispensable part of modern policing. And nowhere is the need more acute for them than in protecting our borders in the fight against international terrorism. Indeed, the global nature of the threat requires information sharing and cross-border collaboration on a scale unprecedented before the 9/11 attacks.

Yet terrorism is but one driver for enhanced border security. In an article on the CIA's website, Roger Z George noted, "It would be short-sighted, however, to focus exclusively on the 'terrorist' threat, as the world is now confronted with a host of border-spanning trends that challenge our traditional intelligence and law enforcement practices. International organised crime, narcotics trafficking, illicit sales of weapons – WMD as well as conventional – not to mention the spread of disease, internet-driven jihadist and other militant forms of radicalisation, and the geo-political implications of climate change head the list of new transnational challenges we are collectively facing."

### The challenge of video and inter-agency intelligence gathering

While the requirement to share relevant intelligence on a timely basis has never been greater, it's not all plain sailing, as Scyron's Wilks points out. "The advent of video evidence has complicated matters greatly. If you think searching for and sharing video between police units in the same force was challenging, extending this to police services in other countries adds a new dimension of complexity."

As anyone who has tried downloading a large video file on the Internet will tell you, video is bandwidth hungry and can be frustratingly difficult to get working because of a plethora of player formats. In fact experts estimate



*DEMON Enterprise was launched at ACPO-APA and it allows the system to run securely and encrypted over a Wide Area Network or the Internet.*

that there are 6,000 different codecs in the world for video and CCTV.

Scyron set about solving the problem of transferring video through its DEMON Enterprise System, which enables officers to share digital intelligence across departments and geographies.

Unveiled for the first time at this summer's ACPO-APA International Policing Exhibition and Conference, the new system takes many of the features of DEMON Manager and allows them to run securely, and encrypted, over a Wide Area Network (WAN) or the Internet.

Wayne Phillips, global Defence Industry Solutions lead for the Public Sector, at Microsoft says: "Scyron has cracked the issue of extracting, analysing and presenting information from all kinds of digital information, including video/CCTV, photographs, scanned documents, audio and mobile phone evidence."

The system gets round the problem of transferring bulky video files by transferring a subset of information about the video, known as "metadata." For example, if a police officer has video footage of a suspected drug dealer meeting in a car park, they can send out the metadata, which contain stills from the video together with text information such as suspect name, location, time, etc. Much of the metadata is automatically generated by the DEMON system.

If interested, police officers in another location may request the video and even schedule a download time so as not to consume bandwidth resources and inconvenience other officers using the network.

Now let's assume that an officer downloads the video. Even if the format is obscure it can still be viewed immediately because the DEMON system identifies and learns the format and player and adds it automatically to

the police service's DEMON library. This means any other officer, irrespective of which terminal they use, is able to play the files with that format in the future.

Wilks is almost evangelical about this new system and claims its real power is to join up different police departments and units in a way that has not been done to-date. "Imagine a beat officer who arrests a man breaking into a car and films the incident using body worn video.

The details of the man and video are captured by the system. If it later transpires the offender is a suspected terrorist, then that video becomes searchable to counter terrorist units. Information on him can be sent instantly to security services around the globe."

But it is not just joining the dots with video evidence that is important. Those tasked with protecting our borders are being equipped with a growing arsenal of technologies, such as X-Ray machines, thermal scanners, biometrics, listening devices, CCTV, etc. The need to capture, view, sort, index, store, retrieve, cross-reference, search and present this information is vital.

The scale of the task is massive. According to the UN, some four million people are smuggled across international borders each year. Equally alarming, Interpol suggests that the illicit global economy accounts for \$500 billion in world trade – about the same size as the combined GDPs of Hong Kong, Pakistan and the Czech Republic.

"International agencies need to be sharing electronic intelligence and video evidence to protect our borders," said Wilks, "but the same can be said of different departments within domestic police services – particularly with the rise of body worn video. Both are important. But I believe the latter is where the information revolution really starts."

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# Mission critical impossible?



Are the UK emergency services making the wrong choices for mobile data applications?  
Robin Burton, *Evolved Intelligence*, carries out an experiment that leads to some key questions.

*“Certainly to me it casts doubt upon the wisdom of rolling out mobile data applications based on commercial networks alone.”*

In the near future we will be increasingly asking our emergency services to do more with less. Mobile data applications potentially offer huge improvements in efficiency and effectiveness. Not only do they promise to speed up routine tasks currently carried out using voice communications, but also to provide valuable new functions such as biometric screening, “life sign” monitoring and tactical asset management. They have to become “mission critical” applications if our emergency services are to stand any chance of meeting the huge demands that we will be placing on them.

Many organisations have therefore started to trial such applications, and many are looking at 3G/GPRS based services. At least in part, this has been driven by the availability of smart, compact and capable handheld terminals. However for a service to become treated as truly mission critical, for it to be rolled out and relied upon, it has to be highly available. It must be available at the times that it is most needed: during major incidents. We have heard many anecdotes about the poor service delivered by GPRS. We therefore decided to put it to the test.

The Sensustech system uses small network probes called PAMs. These units are intended to be fitted into vehicles that are moving around to test the delivered quality of various mobile communications networks. Amongst many things, this includes the measurement of availability, data rates and session drop rates for mobile data transmission.

We decided to do some basic drive testing around Bristol, along the M5 and on rural A roads. We tested the performance of a commercial 3G/GPRS network against the TETRA service. To do this we used two units in the same vehicle to make the test as valid as possible.

On the left you can see the availability map for data services delivered over TETRA along a section of the M5 near Weston Super Mare. As you would expect the service is available everywhere with just a slight drop in performance at one point. The right hand map shows the delivered performance via 3G/GPRS. Here we see many holes in coverage with the service degraded more or less throughout the length of the motorway that was surveyed.

In a similar way that we recorded along a section of the

A361 near Glastonbury. Once again the picture was one of good coverage from TETRA but, in this case, the coverage from GPRS was almost non-existent.

Urban studies showed a much better performance from GPRS. However we know that GPRS is a contended service and that during times of high traffic for voice, the service can become highly congested and essentially unusable.

This survey was a very short exercise and the results are far from statistically significant. However I suspect that the image that it paints is probably, at least in general, a good reflection of the situation nationwide. Certainly to me it casts doubt upon the wisdom of rolling out mobile data applications based on commercial networks alone. This is further reinforced when, following the incident in Mumbai, I read of proposals that commercial networks may be jammed or switched off during major emergencies.

Data can be sent over TETRA. Our survey suggests that availability would not be a problem and that applications run via TETRA could potentially become mission critical. However from discussions with various people I understand that current applications tend to be quite slow.

Over the last couple of years we have been developing a true multi bearer data services delivery platform for emergency services applications. This shows that solutions which “choose” between GPRS, Wi-Fi or TETRA, depending on the bearer networks that are available, are perfectly possible. We have further shown that by developing a bespoke protocol for mobile data applications, rather than attempting to modify an existing solution intended for fixed wire solutions where bandwidth is less of an issue, it is possible to boost data transmission rates significantly. Via TETRA this improvement may be as much as 130% without the use of compression. In practice this means that nearly the whole available bandwidth is used for delivering the “payload” and that applications such as identity picture distribution can be viable over TETRA. By further adding in data compression, still higher performance may be possible.

It seems to me, that multi bearer platforms should be considered by anyone planning to roll out mission critical mobile applications.

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## Why not hop in Airwave's Volvo Mobile Data Car?

*"Some forces want to take the car through areas where there is a known problem with GSM coverage and to compare it with the Airwave service."*

**▶ Richard Page,**  
Airwave.



*A mobile data car for the blue light community has been put together by Airwave and will soon be making its way to your area. BAPCO Journal will be charting the car's journey from concept inception to build and practical on-the-road demonstrations. Today we look at the objectives and proposed features of the Volvo vehicle.*

The mobile data car (MDC) project has been partly led by Airwave Head of Strategic Marketing Richard Page. The plan was to build a car that would demonstrate how mobile data applications could be integrated with vehicle systems – and show how these work in a real operational environment through a series of events at a number of police forces across the UK.

The main objective of the MDC is to deliver the NPIA Mobile Information Acceleration Programme's mobile data solutions directly to end users – or at the very least increase awareness of the type of capabilities that are currently available.

"Forces all know about mobile data and that funding is available, but perhaps some don't fully appreciate the extent of the capabilities that exist today. And that's what we are trying to bring to the forefront," said Page.

The intention of the road show is to agree an agenda with individual forces and create practical bespoke workshops. This means that an individual force's needs are taken into consideration and equipment from suppliers such as Microbus, Carnation and RSG

Engineering can be included.

"Our intention is to run an event programme on two different levels. First, for top level officers, where the focus is on the Airwave Fusion mobile data strategy and other Airwave services. And second, for project leaders, IT staff and fleet managers, where the focus is on technology and how to implement it while getting maximum return on investment," clarified Page.

For demonstration purposes Airwave has teamed up with Volvo and selected a Volvo Police D5 Estate Manual high speed pursuit vehicle configured by Ford SVP as an unmarked response car.

"This means the vehicle can be used by the ambulance service as well as the fire service – the only difference being that these services do not require software that deals with vehicle speed enforcement or access to the Police National Computer."

A key capability of the vehicle is the TETRA Gateway radio transmitter that is fitted in the MDC, which in essence acts as a mobile TETRA communications hub. "The Gateway transforms the vehicle into a powerful

base station," explains Page. "The MDC is able to bring in extra capacity for special events or incidents. Using a Gateway allows the coverage area to be extended creating a mobile base station for hand portables whilst still enabling communication with trunked mode users."

Day-to-day applications include fire crews who can use the appliance as a gateway or repeater on the fire ground, and allows ambulance crews to leave the vehicle to attend to patients. Using the Gateway, mobile data terminals can be used to "page" direct mode users – it is able to detect, for example, vehicle battery flat

warnings and return to vehicle messages. Users out of coverage of the national network can also report their current position to either their vehicle or to an operator and to their vehicle.

"Forces can borrow the vehicle for an extended period of time – say a week", adds Page. "We've done this in the past so officers can see for themselves how mobile data works over the Airwave network. Some forces want to take the car through areas where there is a known problem with GSM coverage and to compare it with the Airwave service."

### Kitting out the DMC

- Microbus demountable LINX tablet PC (and subsequent install of Expansion Box to support ANPR etc.)
- TETRA PDA
- GPRS PDA with ability to charge batteries
- Microbus Sabre 10- 10x zoom forward facing camera
- TETRA radio and Gateway communications and aerial
- TRACKER stolen vehicle recovery system
- RSG LED flip down rear message sign
- Genisys Carnation Control for blue

lights/siren via the onboard mobile data terminal

- Blue lights flasher unit
- Clear lens (covert) front lights and rear parcel shelf lights with blue LEDs
- Clear lens (covert) tailgate lights with blue LEDs
- Clear lens fend off lights with blue LEDs
- 100 watt three tone siren with honring transfer
- 3600 LED clear lens low profile lightbar with rear red LEDs, front spotlights and side alley lights

- RSG Jupiter Multi Function Data Recorder with GPS and GSM options

### Applications on PDAs and Tablet PC

- Mobile PNC
- Mobile Voters
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## The future for GIS – mobile, interoperable and open

*Using an open system for GIS was key for the British Transport Police, who wanted to share data with partners such as Network Rail. Dan Worth examines some of the latest GIS and web mapping developments, as well as benefits in keeping GIS solutions open.*

*"We didn't consider a proprietary system because we knew we wanted to be able to share information and add applications where necessary."*

**▶** *Michael Wallace,  
British Transport  
Police.*

In the last five years or so the world has gone through a massive change. Since Google launched Google Maps for the first time in history almost the entire planet is mapped and visible from above to anyone with access to the Internet. This is a fairly staggering innovation yet one that has happened so simply we've hardly registered its significance.

The impact of mapping software, geographical information systems (GIS), in the emergency services sector has been huge too, with specific applications developed by a number of companies to provide the emergency services, especially the police, with a suite of mapping tools that provides them with an array of benefits.

"Google Maps has helped enormously in making people

understand the benefits of mapping software," says Michael Wallace from the British Transport Police, "but the specific systems we can use go far beyond that." The British Transport Police have recently signed a contract with Spatial Technology to use ISM Web software to provide an open source GIS on which information can be shared with partners, such as Network Rail. "By linking all our GIS data into one common system we are able to keep our data updated quickly and accurately without having to do it remotely at each location, as previously," Wallace explains. "The importance of having an open system is something that was key to the contract. We didn't consider a proprietary system because we knew we wanted to be able to share information and add applications where necessary.



*Opposite page: Vicky White from ESRI says a new dimension of GIS is the gradual increase of mobile mapping software and information, such as including co-ordinates determining where an officer issued a ticket. Left: Building up of information (such as homicide incidents in Glasgow, pictured) as used by the Violence Reduction Unit in Strathclyde Police, offers many benefits.*

Because we cover the entire rail network of the UK it's more important for us to share information than hide it, so the ISM Web software was ideal."

Ian Rudd, the Managing Director of Spatial Technology, agrees this is an important aspect of GIS. "Using an open system that can incorporate other data such as the National Land and Property Gazetteer, is great because it adds extra value to the technology. Something like Google Maps shows people what is available for free so when they come to purchase a technology they know they should be demanding a wide range of tools.

"Working with the BTP provided a unique opportunity as they have officers stationed across the entire country, policing the entire rail transport network. The project started in 2007 and has progressed from there, with gradual updates to systems ensuring everything went smoothly. Due to the central data repository that knows where other data resides we can update systems as information changes, on all manner of things such as incidents, road widths or address information."

Using an open software system for sharing information is important but Wallace explains that for analytical purposes the BTP uses a range of other software that can provide detailed statistical breakdowns of data collected.

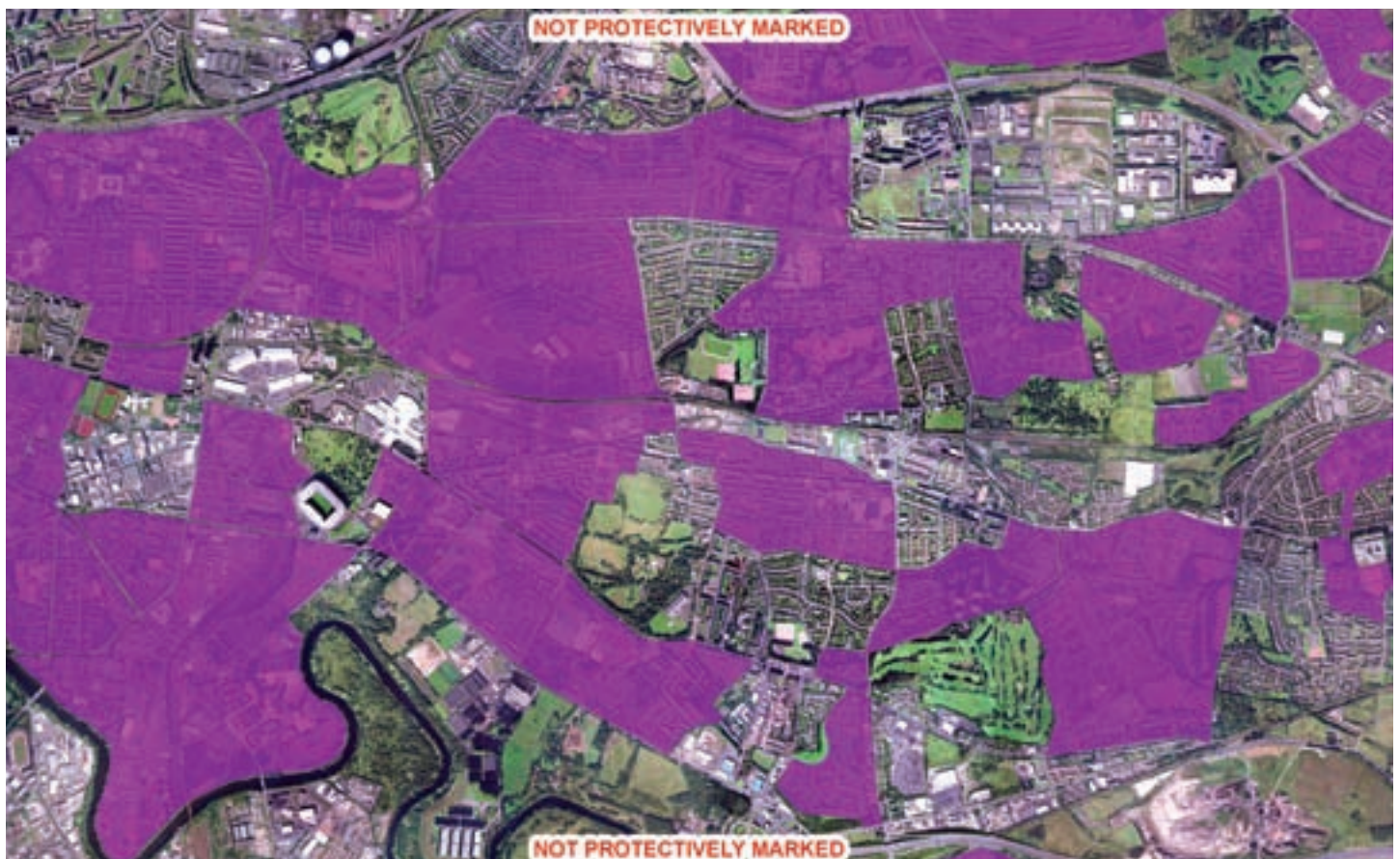
The analytical side of GIS technology is something ESRI UK offer to a wide range of forces across the UK and, as Will Lindon, an Analyst Coordinator at the Violence Reduction Unit in Glasgow, with Strathclyde Police explains, is having real benefits to policing. "Building up information on mapping software offers us a huge range of benefits. By

plotting time, date and location information we can build up a far clearer picture of where and when crimes are most committed. Then we can plot other information around this such as transport links or the locations of known offenders, and this gives us far more information to work from than previously."

One area the ESRI software has proved invaluable in helping with policing has been in tackling the gang problem in Glasgow, as Lindon explains. "By being able to plot and see the gang territories we have far more detailed knowledge of their exact locations and how the areas change. This allows us to better deploy resources to where the problem is at its worst and at the right times too. Not only this but we can also use it to help with city centre policing. By being able to see where most troublemakers are from, when picked up in the city, we can see their most likely route to the city from the outskirts on public transport. This allows us to police more proactively by tackling the problem before it begins, getting out on the buses and trains and stopping known offenders from entering the city."

Being able to overlay other information on GIS software is a key benefit for police forces as Vickie White, Account Manager from ESRI (UK) explains: "Using a common operational platform means a vast array of information of everything from crimes to low bridges can be plotted and shared. Because the entire Scottish Police force will use the ESRI software they know they are all looking at a common source of data and information.

"Sharing information is an important part of GIS as maps



*ESRI software has been invaluable in helping to tackle the gang problem in Glasgow. It has allowed officers to plot gang territories and therefore create an accurate picture of where to best deploy resources.*

are a very well known technology and as people know what they are looking at very quickly. You can add information as and when necessary and tailor your information to make it relevant to various parties, such as councils or utility companies, so they can all work towards the best possible outcome. Some bus companies even use our mapping software to plot the optimum bus route to make their service as fuel efficient, and therefore cost efficient, as possible."

A new dimension of GIS technology is the gradual increase of mobile mapping software and information, as White notes: "Forces have a range of mobile devices that have the potential to use our mobile software giving them the most up to date geographical data at their fingertips. Furthermore, it is possible to include an X and Y coordinate that can determine where an officer issued a ticket, or was at an incident at a certain time, to within a few meters, basing it around the software."

Mobile mapping is something that Gary Randle from Cadcorp believes is the next step. "We're already seeing a move to use mapping software in-vehicle, in some ways it already exists with sat-navs, but by incorporating our software we can add value that delivers benefits to emergency service customers."

Cadcorp recently launched its new Spatial Information System (SIS) 7.0 that allows data to be incorporated from other systems for use within desktop, web and mobile GIS environments. Cadcorp SIS can also be integrated into partner applications, underlining the growing market for adaptable high-end GIS technologies based on open standards.

"There have been a lot of drivers in the GIS market in recent years that have really helped people understand its benefits and push its development," explains Randle. "The legal requirement for police forces to show crime data on maps that the public can access has been a key driver, while the increased use of internet mapping sites has helped people become comfortable using this technology and making it work for them.

"Furthermore, as the technology becomes more widespread it is being used increasingly by all three emergency services. We've seen a number of police forces and fire services utilizing GIS to analyze incidents which provides improvements with resource management and deployment. For example, some fire services and police forces are sharing data to plot incidents of stolen vehicles and where they are found abandoned. Plotting this information helps identify frequently used routes and analysis for other trends. Building a database with spatial information can improve deployment for vehicles on patrol. Ambulance Services also use Cadcorp SIS components to position vehicles near to accident black spots."

The future for GIS is undoubtedly one that will continue to play a major role in the day-to-day work of the emergency services. Ian Rudd from Spatial Technology agrees, saying, "There's no doubt that events such as the 2012 Olympics will benefit massively from the use of GIS and web mapping software for security management. But, the future for GIS lies also in becoming a standard part of the emergency services technology arsenal, allowing them to better manage incidents, analyse crimes and share a raft of data across a common platform.



# Two-way paging hits the UK

*Paging has taken a big step forward with the launch of the first ever two-way paging service in the UK this month. Chris Jones, CEO of PageOne, discusses this exciting new development and the impact that two-way paging will have on the paging landscape.*

Having effective communication structures in place is vital for all public sector organisations, particularly in the current financial climate where there is pressure to improve efficiency levels while simultaneously raising the quality and reach of the mobile communications methods that keep staff connected. Paging has long been seen as crucial technology in the public sector with its real time, one-to-many broadcast capabilities and its higher level of reliability and robustness when compared to other forms of mobile communication.

In day-to-day operations the technology provides an excellent way of communicating up-to-date information to staff, while in a crisis paging stands alone as the one fail-safe form of mobile communication. For example, in the aftermath of the extensive floods that engulfed large areas of Gloucestershire during July 2007, mobile phone networks failed to cope with the sudden surge in demand. However, the emergency services and voluntary organisations such as the British Red Cross were able to rely on the PageOne paging network as a way of co-ordinating the emergency response.

One of the true benefits of paging is its unique broadcasting ability, enabling a single emergency message to be received by thousands of people simultaneously and it is still one of the most cost-effective ways to communicate to large numbers of individuals. The paging network is also free from non-essential and public traffic that can congest and delay the mobile network traffic, especially in times of heightened public anxiety, which makes it ideal for providing resilient communications to private and public sector organisations alike.

The advent of the two-way paging service that PageOne has launched is expected to further boost the role of paging both for effective day-to-day communications as well as for emergency and incident management response. The two-way pager combines the speed, reliability and broadcast ability of paging, with the auto acknowledgement and response of GSM. Introducing the response element to traditional broadcast messaging very

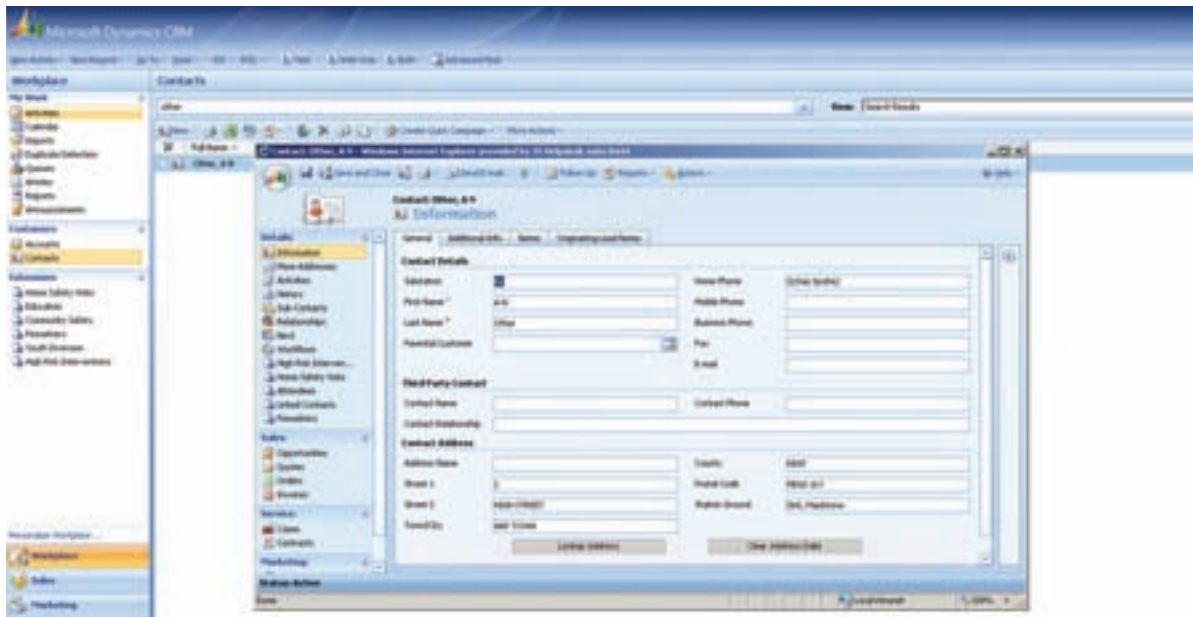
effectively closes the communication loop, giving the organisation's control centre the ability to determine if the paging message has been delivered; if the message has been read; and if the person can respond. This vital feedback is further enhanced by the ability of the two-way pager to report its location as well, giving the control centre all the important information needed to manage an incident quickly and efficiently. In addition, all this information is logged and provides a full audit trail of messaging events for review at a later date. In comparison with SMS the two-way paging service delivers more information, and for the first time the incident manager can target messaging based on locality as well as availability.

The introduction of the reply path for paging has also been extended to group calling or broadcast messaging, so in the immediate aftermath of unforeseen events such as fires, floods and terrorism, there may be a large number of groups that need to be contacted instantly and kept informed using the one-to-many broadcast ability of paging. This one to many group call is now further enhanced by allowing all those individuals to auto-confirm receipt of the group message, read, reply and report location which is then displayed on a map identifying all the responders within the group. Linking two way replies and location information with group broadcast that could include thousands of members, makes this a very powerful incident management tool.

Paging plays an important role in providing the public sector with a resilient, robust and reliable solution for real-time broadcast messaging. The addition of two-way, location-aware services further boosts the role that paging can play in an effective communications strategy. It is a solution that every public sector organisation should carefully consider when researching into or revising its field communication needs. If it is vital to know when the message was delivered, when the message was read, if the person can respond and where they are, two way paging can provide the solution.



*Chris Jones, CEO of PageOne, outlines how the addition of two-way, location-aware paging can boost the role of paging in an effective communications strategy.*



# Managing prevention

*Tim Vernon of Optevia highlights how inadequate access to data has a direct impact on home safety, and argues for better data-sharing across fire prevention and safety teams.*

*“Unconnected and often paper-based admin systems simply cannot live up to the demands of the modern fire service.”*

The UK Government's modernisation agenda for the fire service (as outlined in the 2003 white paper *Our Fire and Rescue Service*) calls for a greater emphasis on fire prevention activities not least since the white paper recognised that 50 per cent of fire-related deaths reportedly take place before the fire service is even called\*.

No one disputes the need for fire prevention activities in a modern fire service, but there has been debate around how these duties are managed and the impact this has on firefighters' workloads, firefighter safety and essential emergency response.

The Fire Brigades Union\*\*, Health and Safety Executive\*\*\*, and Audit Commission\*\*\*\* may all have distinct positions on the issues surrounding fire safety, yet seemingly common to all are the views that inadequate fire-prevention workload management, inadequate training and inadequate access to accurate risk assessment data has a direct effect on the safety of the public at home and at work and on firefighters in the line of duty.

Fire and rescue services typically have three teams that carry out fire safety and prevention activities: community safety teams tasked with fire prevention in the home, technical fire safety teams tasked with monitoring how commercial and public organisations comply with fire regulations, and the emergency operations teams who are tasked with ensuring the safety of operational fire fighters in the line of duty.

Each of these teams generates valuable risk-related data that can have a direct impact on the effectiveness of the prevention and/or management of fire incidents. To operate

at maximum efficiency in preventing avoidable deaths and damage to livelihoods and property, fire services need timely access to accurate risk-related data, no matter which team generated the intelligence. Yet in many cases the back office systems that support the storage, management and analysis of life-critical information are inadequate and out-dated.

Unconnected and often paper-based admin systems simply cannot live up to the demands of the modern fire service nor do justice to the sophisticated risk data that the safety teams generate and work with.

Further, the additional work created by the stand-alone systems not only adds to the burden of administrative duties, impacting on the time that fire prevention teams could be out using their skills and experience to make a difference, but often it cannot effectively capture and support the need for case escalation and the historical intelligence and analysis essential to enforcement work.

No one software system can provide a panacea for the issues around fire service data management. Yet many of the issues touched on above can be addressed, simply, cost effectively and efficiently, without the need for risky large scale IT implementations with their accompanying challenges of time, resource and budget. Top six benefits for fire services of risk-related data-sharing:

- Better data: cleaner, more accurate: Consistent data forms across community, technical and operations teams mean data is captured, analysed and reported against easily, creating valuable insights and speeding up the Integrated Risk Management Plan (IRMP) returns process.

- **Manage workloads better:** Better scheduling and management of risk assessments cuts down on unnecessary admin, freeing up officers to focus on their core areas of fire and safety expertise.
- **Enforcement:** Effective case management ensures that audit histories for properties are easily accessed, deferred audits are tracked, enforcement issues are managed and, where necessary, cases can be escalated.
- **Sharing life-critical data:** Information taken from community, technical and operational assessments can be combined with data from incidents to continually inform and improve local knowledge and training activities. Further, data shared between teams can be used to pre-brief auditing teams, and supplement audit reports.
- **Availability of risk-related information:** All life-critical information, irrespective of source, can be made available in a timely fashion to better inform fire fighters in the line of duty. Combined live risk-data from all sources can be accessed on the mobile data terminals in fire appliances improving fire fighters' dynamic assessment of risk when attending an incident.
- **Risk assessment:** The dynamic risk assessment improvements afforded by delivering live life-critical data to officers in the field are clear. In addition, an ever more

accurate and sophisticated understanding of the complex interplay of physical, geographical, behavioural and socio-economic influences can be developed by combining intelligence from the three safety programmes with incident data. This continually improving assessment of risk leads to increasingly effective prevention strategies and tactics.

Public sector CRM specialist Optevia has experience in integrating and customising Microsoft Dynamics CRM specifically for fire services. Microsoft Dynamics CRM is an easy to use system that tightly integrates with other familiar Microsoft systems such as Outlook. Optevia can quickly design and implement a customised installation of Microsoft Dynamics CRM for fire services by using its replicable workflow templates and integration gateways into core fire service applications, meaning that an effective, efficient service can be up, running and delivering real business benefits in a very short period of time.

\*[http://www.politics.co.uk/briefings-guides/issue-briefs/policing-and-crime/fire-and-rescue-service-\\$366552.htm](http://www.politics.co.uk/briefings-guides/issue-briefs/policing-and-crime/fire-and-rescue-service-$366552.htm)  
 \*\* "In the line of duty. Firefighter deaths in the UK since 1978". A report by the Labour Research Department (LRD) for the Fire Brigades Union. November 2008  
 \*\*\* <http://www.hse.gov.uk/press/2008/e08002.htm>  
 \*\*\*\*<http://www.audit-commission.gov.uk/reports/accessible.asp?ProdID=65813F7C-C7DB-41F9-BAD6-3EA0EE82B6DE>

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# Really tough on crime

*Laptop computers have sometimes not been considered tough enough for regular use in the field – but this is not Leicestershire Constabulary's experience, writes Adrian Justins.*

*The Tempus ruggedised vehicle dock allows the laptop to be mounted vertically against the dashboard.*

**B**y using Panasonic's cutting-edge CF-19 Toughbook computers Leicestershire Constabulary has been able to pioneer the use of laptops as a mobile communications tool amongst the police force.

As Leicestershire's Chief Superintendent Jason Masters says: "The truth is that police communications had not moved on a great deal since the introduction of the two-way radio forty years ago."

Of course, officers now have mobile phones and many forces have started using Blackberries and PDAs. In fact, the UK government has set a target of 10,000 mobile data devices to be in use throughout the country's police forces by October 2009.

Whilst smartphones are a useful tool for Bobbies on the beat they're limited to about five or six software applications. Chief Superintendent Masters saw how organisations such as the fire brigade were starting to use in-vehicle laptops and with government funding available, his force took the decision to implement a similar solution throughout its fleet of nearly 300 vehicles.

## Several benefits

There were several significant benefits to be had from a demountable product that would allow officers patrolling neighbourhoods to access the software applications found on their desktop computers, the most immediate one being that vehicles would no longer need to return to base so that officers could complete crime or incident reports.

"There was a huge saving in time and resources to be made," says Inspector Sanjiv Pattani, Leicestershire's Mobile Information Project Manager. "Having this facility would cut down the bureaucracy enormously." Previously, creating a full crime report could take between five and seven days and would involve clerical staff to fill in and scan up to ten paper-based forms. With a vehicle-based laptop one officer can complete all paperwork in a very short time without clerical support.

And Chief Superintendent Masters adds: "We are the only force in the country who can make a crime report at the scene of the crime but others are sure to follow our lead."

Leicestershire Constabulary was clear about what it

required from the new system and entered into an evaluation process to choose a suitable product. Inspector Pattani explains: "We considered several laptop-based options but chose the Panasonic CF-19 because it was a fit-for-purpose demountable solution that replicated the entire suite of about 70 software applications available back at base.

"So not only would officers patrolling neighbourhoods have instant access to an enormous variety of up-to-the-minute databases and other vital information it also meant that they required very little training with the CF-19s. They could be up and running after just a few minutes."

Another significant factor behind Leicestershire Constabulary's decision to adopt the Toughbook was that this solution combined resilience, ergonomic suitability and state-of-the-art IT systems and information flows.

### In the dock

An important reason why the Toughbook was chosen was the way that it works with the Tempus ruggedised vehicle dock. This allows the laptop to be mounted vertically against the dashboard and makes it easy to read the screen and operate the keyboard. It also protects the CF-19 and allows quick undocking and re-docking via a simple recessed release catch, which can be locked if desired.

Each Toughbook can easily be removed and taken on to premises where incidents have occurred. Communication between the laptop and base is made easy using a 3G mobile broadband connection although other forces in remoter areas in the country where coverage is patchy could explore switching to other available networks such as TETRA, the police radio signal frequency.

Leicestershire's force took delivery of its first laptop in April 2008, and began installing them throughout the fleet after a short but instantly successful trial. By March 2009, the majority of vehicles in the force were equipped with a unit.

One benefit is that because each Toughbook is issued to a vehicle and not individual officers, it remains in use whenever the vehicle is in use, which is more or less continuously.

So whilst a PDA has to be issued to each individual officer (and is thus only used when an officer is on duty) a Toughbook has four times as many users.

Among the 70-odd software applications at the disposal of officers out on patrol in neighbourhoods, are resources such as internal websites, crime records, intelligence logs and command and control logs. Now, when an officer arrives at an incident they have as much information as their colleagues back in the station. Likewise, patrolling officers can update and deliver information in real time back to base, without having to return to the station.

This ability to access all of their desktop-based software applications whilst patrolling the streets is a major benefit. For example, with a live link into databases such as the automatic number plate recognition system it's possible to see in an instant every detail about a vehicle's history and its ownership, including tax and insurance so an officer will know straight away if a car is illegally on the road or if the driver is telling the truth when questioned about the vehicle.

Another benefit is that any officer unsure about a point of law can instantly check the Police National Legal Database (PNLD) instead of radioing back to base.



### Positive reaction

All of Leicestershire Constabulary's officers who have used the CF-19s have reacted enthusiastically to the implementation of the Toughbook programme. Inspector Pattani enthuses: "Our officers say the CF-19 platform is more than fit for its purpose and don't hesitate to recommend it to other forces."

An independent work study conducted by Leicestershire Constabulary showed its officers spent on average 30% of their time back in police stations completing paperwork. The CF19 Toughbook platform, which delivers a truly mobile office experience, has already saved thousands of hours of officer's time, which is being reinvested in patrol time in neighbourhoods. The total hours saved and additional visibility gained since implementing CF19s is already equal to the visibility provided by an additional 200 officers. Mobile working out on patrol means that every officer is able to concentrate on the important job of fighting crime.

The adoption of the CF-19 has already been an unqualified success for Leicestershire Constabulary but the force isn't resting on its laurels, its chief superintendent expects the CF-19 to play an increasingly valuable role in the fight against crime: "For example, we have to modernise the way we take statements. We want to use voice recognition and introduce onscreen signature taking and these are just some of the ideas that we can develop for the Toughbook," says Masters. And with so many units in constant use, Leicestershire Constabulary expects that many ideas for future applications will come from the ground-up. As Inspector Pattani puts it: "We're limited only by our imaginations." Thanks to Leicestershire Constabulary and the CF-19 it seems certain that the laptop will become as commonplace in police work as the whistle and truncheon were just a few decades ago.

*Leicestershire Constabulary's work study revealed that the total hours saved and additional visibility gained since implementing the Toughbook is already equal to the visibility provided by an additional 200 officers.*

## Changes at the Association

The annual Conference at BAPCO this year also saw significant change with regard to its leadership. Although the organisation has four elected posts, the Executive Director over the last 15 years has been Ken Mott. Indeed it would be fair to say that BAPCO has been very much the result of Ken's foresight, energy and professionalism, in creating a body able to meet the wider needs of civil contingency users and commercial suppliers.

Very much at Ken's suggestion, elected officers reviewed the resilience of BAPCO and recognised the need to develop both knowledge and expertise across the range of our business activities. It was decided that we needed to create a transition period which would enable Ken to pass on his knowledge to the new Executive Director. In Ray Trotter we have an individual who has served in all the elected positions and whose knowledge and dedication to BAPCO are without compare. Ray was enthusiastic to take on the new role and with the appointment of Ken as our life

President, we now have an opportunity to continue to build upon the fantastic work done by Ken, but at the same time enable the new Executive Director to learn in a safe environment.

The elected Officers and the wider Management Team take the opportunity of wishing both Ken and Ray good luck in their new roles.

### BAPCO Roadshows 2009

The remaining dates and venues for the 2009 events are:

- 7th October at Newcastle Racecourse Conference Centre,
- 21st October at Hendon Hall Hotel, Hendon, London, and
- 4th November at The Royal Court Hotel, Coventry.

For more details, visit [www.bapco.org.uk](http://www.bapco.org.uk)

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## 1. PERSONAL DETAILS

TITLE	
FORENAME(S)	
SURNAME	
POSITION HELD	
ORGANISATION	
MAILING ADDRESS	
POSTCODE	
BUSINESS TELEPHONE	
FAX	
HOME ADDRESS (If different from above)	
POSTCODE	
EMAIL	

I agree to BAPCO sending information to me regarding its events, products and services. BAPCO will not pass on any information to other companies or third parties

## 2. CATEGORY OF MEMBERSHIP APPLIED FOR

ACTIVE  ASSOCIATE  COMMERCIAL  INTERNATIONAL ASSOCIATE

OFFICIAL ORDER NO

Please send further details of Corporate Membership

## 3. ORGANISATION TYPE

Please tick one item that best describes *your* organisation

PUBLIC SECTOR AREA SERVED		ORGANISATION TYPE		COMMERCIAL	
Parish	<input type="checkbox"/>	Law Enforcement	<input type="checkbox"/>	Manufacturer	<input type="checkbox"/>
District	<input type="checkbox"/>	Fire / Rescue	<input type="checkbox"/>	Distributor	<input type="checkbox"/>
County	<input type="checkbox"/>	Ambulance / Medical	<input type="checkbox"/>	Dealer	<input type="checkbox"/>
Regional	<input type="checkbox"/>	Emergency Management	<input type="checkbox"/>	Maintenance	<input type="checkbox"/>
National	<input type="checkbox"/>	Local Authority	<input type="checkbox"/>	Consultant	<input type="checkbox"/>
Private	<input type="checkbox"/>	Central Government	<input type="checkbox"/>	Network Provider	<input type="checkbox"/>
Other	<input type="checkbox"/>	Public Utility	<input type="checkbox"/>	Training	<input type="checkbox"/>
		Other	<input type="checkbox"/>	Personnel	<input type="checkbox"/>
				Other	<input type="checkbox"/>

**4. POSITION RESPONSIBILITIES**Please tick the item that best describes *your* responsibilities in each area:**POLICY & PROCEDURE**

- I approve/develop policies and procedures  
 I oversee implementation  
 I have a limited role in implementation  
 I do not have a role in implementation

**PURCHASING**

- I approve purchases of products and services  
 I select specify products and services  
 I recommend products and services  
 I do not have a role in purchasing

**PERSONAL TRAINING**

- I approve training programs  
 I develop/purchase training programs  
 I implement/teach training programs  
 I do not have a role in training

**5. MEMBERSHIP CATEGORY & FEES (Select One)** **ACTIVE MEMBER**

Persons employed or contracted by a public safety agency or a department of central or local government responsible for the provision of public safety services, or are retired from such a position, who are directly responsible for, or retired from, the management, specification, design, installation, maintenance, operation and use of public safety communications and information systems, are eligible for this category of Membership  
**£40.00 per annum**

 **COMMERCIAL MEMBER**

Those persons, in business or industry, who receive compensation in any form for services rendered or products sold, are eligible for this category of membership.  
**£40.00 per annum**

 **ASSOCIATE MEMBER**

Those persons, who otherwise meet the requirements of Active Membership, may, at the applicant's discretion, select this category of membership, and, those persons not meeting the requirements of any other category of membership that share the Purpose and aims of the Association, are eligible for this category.  
**£28.00 per annum**

 **INTERNATIONAL ASSOCIATE MEMBER**

Persons who are not citizens of the United Kingdom that share the purpose and aims of the Association are eligible for this category of membership.  
**£50.00 per annum**

Details of Corporate Membership can be obtained from: ExecD@bapco.org.uk

**6. PAYMENT INFORMATION**

Total amount due £ \_\_\_\_\_

- Individual or  
 Organisation is paying for Membership.  
 Personal cheque enclosed.  
 Official purchase order No. \_\_\_\_\_ enclosed.

**7. OPTIONAL INFORMATION**

How did you hear about BAPCO?

- Co-worker    BAPCO Journal    Sponsor  
 Other \_\_\_\_\_  
 Gender:    Male    Female  
 Date of Birth:   Day \_\_\_\_\_ Month \_\_\_\_\_ Year \_\_\_\_\_

**8. APPLICANT'S STATEMENT**

I hereby apply for membership in the appropriate class of **BAPCO**, and agree to abide by the Constitution and Bylaws of the Association. I understand that by joining I also become a member of the BAPCO region serving my area and that my subscriptions are payable annually, based on my first day of membership.

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

TEL: 01522  
575542

**WHEN COMPLETED PLEASE FORWARD THE WHOLE FORM  
 (WITH APPROPRIATE ENCLOSURE) TO:  
 BAPCO, PO BOX 374, LINCOLN LN1 1FY**

FAX: 01522 575542

(Remember to fax both sides of the form)

**FOR OFFICE USE ONLY**

RECIEVED  
 REGION  
 MEMBERSHIP No.

CERTIFICATE SENT  
 RENEWAL DATE



# Bapco South East Region Resilient Telecommunications seminar

*Resilience was the theme of the South East Region Seminar held on the 26<sup>th</sup> of November at Maldon in Essex. The venue and refreshments were kindly provided by Andy Fleet and his team at Samdale, and around 40 delegates attended what proved to be a fascinating series of presentations, writes Alan Lindfield, Acting Chair, SE Region.*

Our keynote speaker was Jeanette Innes, Assistant Director and Programme Manager for Resilient Telecommunications at the Cabinet Office. Jeanette started by explaining where the programme sits within the Civil Contingencies Secretariat and continued by describing the programme objectives and key areas of work. We heard that progress to date included developments in privileged access schemes, satellite communications and Telecommunications Sub-Groups. Jeanette then spoke in more detail about the National Resilience Extranet (NRE) and the High Integrity Telecoms System (HITS) projects.

It was explained that the Cabinet Office mission is to make the UK more resilient, and to improve the nation's capacity to absorb, respond and to recover from disruptive challenges of all kinds. The Capabilities Programme is the core framework through which the Government is seeking to build resilience across all parts of the UK

Jeanette made an interesting comparison between the Cold War threats that some of us used to consider from our underground bunkers in the 1970's and the very different threats that we face today, and went on to explain the main areas of activity. These include providing information, providing support and guidance to Local Resilience Forums (LRF) and Telecoms Sub-Groups (TSGs), and working with the

Electronic Communications Resilience and Response Group (EC-RRG) and the wider responder community.

We were reminded that the Mobile Telecommunications Privileged Access Scheme (MTPAS) has replaced ACCOLC as the name of the scheme (although ACCOLC as a facility is still used by the network providers) and that Telecommunications Sub-Groups will manage the new scheme locally.

It was explained that progress on the Government Telephone Preference Scheme (GTPS)/Fixed Telecomms Privileged Access Scheme (FTPAS) has been hampered through being closely aligned to the rollout of Next Generation Networks, but the work to de-couple from the mass-changeout and to define services is now under way.

Finally, Jeanette summarised progress on the Satellite Catalogue scheme, the Telecommunications Sub-Groups which have been set up in all but two LRFs, and the National Resilient Extranet and High Integrity Telecommunications projects. The vision for the NRE is that it will facilitate multi-agency communication and easy access to a range of documents up to restricted level.

Having heard about the organisation of resilience at national level, we were then told about the Telecommunication Sub Groups at local and regional

*The Cabinet Office's mission is to make the UK more resilient, and to improve the nation's capacity to absorb, respond and to recover from disruptive challenges of all kinds.*

resilience forum levels. Our speaker for this session was Tony Morris, Chair of the Sussex LRF TSG & Southeast Regional TSG, who had also done an excellent job of designing the programme for the event and arranging the speakers.

Tony began by describing the situation before TSGs and the need for coordination. He explained the aims and objectives of a TSG, focussing, not unnaturally, on the Sussex Group and Southeast Regional TSG. He showed a fascinating diagram setting out the organisations that could communicate with each other. Given that many connections were possible only through satellite, the need for more interworking was very graphically illustrated.

Tony explained the role of TSG's in bringing responders together, promoting contacts between users and specialists and sharing knowledge and resources. He went on to cover the need for agreed protocols for managing limited resources and capacity, and highlighted some of the issues around mutual aid, and the need for PMR spectrum.

The programme continued with a presentation by Keith Wallis, Emergency Planning Manager of Cable and Wireless, and Chairman of the Electronic Communications Resilience and Response Group. Keith was to focus on how communications systems can be protected and he started by reminding us that 2000/2001 was "a bad time for telecoms".

Keith outlined the history of planning for the infrastructure and services critical to the UK National infrastructure, from its early stages when OFTEL was tasked with producing a national emergency plans for telecoms. He described the role of the Telecoms Industry Emergency Planning Forum, established early in 2002 to co-ordinate the industry response to a crisis. This was a tripartite arrangement, with industry, regulator and government representation. The scope included resilience and response planning and the real-time national process for industry.

Keith described NEAT, the National Emergency Alert for Telecoms, which issues alerts and establishes conference calls if a situation involves more than one service provider. This can be invoked by any member and operates around a central national control supported by BT and Cable & Wireless.

He continued by describing the six-year development of the TI-EPF into EC-RRG, during which time Chairmanship passed from OfTel to the Cabinet Office. He listed some of the incidents that have been managed, including 7/7, the Buncefield Oil depot fire and the Cumbria train crash. Regulatory Reform in the shape of the Civil Contingencies Act had also occurred during this time and the Chairmanship of the Group had now passed to industry.

Keith concluded by outlining the main work items for 2009, including a review of the NEAT process, EMPEX 2009, Civil Contingencies Act enhancement and planning for pandemic flu and the London Olympics in 2012. Following an excellent lunch, the resilience theme was taken up by Fred Micklewright, Head of Business Continuity & Emergency Planning for Airwave Solutions Ltd.

Fred's subject was the resilience issues that providers need to consider and he went on to give an excellent insight into the Airwave network. He started by listing the main issues to be considered, starting with risk assessment and the identification of mission critical systems and services and single points of failure with others grouped into levels of toleration. Decisions then have to be made about the level of

required resilience to mitigate the risk and to maintain an agreed level of service. He stressed the importance of focussing on the required services and not the technologies.

Keith finished by summarising the changes that have occurred since the original PFI contract for Airwave, in the light of additional drivers and the changing face and significance of threats. The original DR timescales were no longer appropriate for the 21st century. He explained the major infrastructure changes that have been introduced to improve resilience, in the duplication and separation of the main arterial connecting transmission and the switch sites.

### Digital ping pong

The final session was delivered by our host, Andy Fleet, of Samdale. Andy had chosen as the intriguing title of his presentation, "Resilience – knowing when it's needed".

He started by describing situations in which it might not immediately be apparent to users exactly what was occurring to degrade service on a network such as Airwave. He noted that LRF's are preparing for major threats to critical infrastructure, many of which have an immediate and obvious impact and are therefore readily detected. More subtle threats, whether accidental or malicious, often go undetected until they impact in a big way on the service delivered to users.

Andy then introduced the audience to an effect he called "digital ping-ponging" which causes excessive handover activity, and went on to explain why this is very bad for networks. This can evidently lead to an increased likelihood of call setup failure, and results from the requirements of the TETRA Standard which states that intra-handover call setup requests must be rejected. Every handover means two to eight messages exchanged between radio and base station and this obviously causes increased load on base stations and switches. Every handover results in database updates and sometimes authentication and call restoration tasks.

He explained that in a situation where radio has a high RSSI from the serving cell but signal quality is poor, if there is a neighbour cell with better signal quality the TETRA standard allows the radio to move cell even if the RSSI from the neighbour is weaker. Having moved to the weaker cell the radio will begin neighbour monitoring of the cell it has just left and will find a very strong RSSI – at this stage signal quality is not assessed (this happens only when the radio is on the cell) and this cycle can continue indefinitely.

Similar problems can occur when there is a strong in-band non-TETRA signal. Because most TETRA radios perform neighbour cell "monitoring" which measure only the RSSI – the radio doesn't know whether a "neighbour cell" signal is from its own network or a foreign one. The radio will only discover the identity of the network for the cell it has moved to when it decodes the system information on the control channel – if the cell has a country or network code that the radio is not allowed to access then the radio will discard the cell and try the next ranked neighbour. Eventually it will find a neighbour cell for its own network but if the original cell it left appears as a neighbour of the new cell it may well move back and the cycle may begin again.

Andy concluded his fascinating talk by emphasising that you need to know about the problem before you can fix it!

On behalf of all who attended, I would like to thank Andy Fleet, Tony Morris and Tracey Mott for an excellent event.

*Andy Fleet introduced the subject of "digital ping pong", which results from the requirements of the TETRA Standard which states that intra-handover call setup requests must be rejected.*

# Down under with APCO



*Colin Evans, a member of BAPCO North West and North Wales Region, is an Association member of long standing who was awarded the Gareth Wilkinson Memorial Award in April 2008 for his outstanding, and voluntary, dedication and contributions to the development and purpose of BAPCO. As part of this Award he chose to attend the APCO Australasia (APCOA) Conference and Exhibition held in Sydney, Australia on 1-4 March 2009. Here, he gives his impressions of the event – not from a technical point of view, as he leaves that to the experts – but from an individual member's standpoint of how BAPCO fits into the worldwide APCO family and how he sees BAPCO's future involvement and influence growing as the respect of other APCOs grows towards BAPCO.*

**E**ven before the official event got going, the BAPCO delegation that included the President (at the time), Ian Readhead, and the Executive Director (at the time), Ken Mott, as well as myself, started an intense period of meetings. The first of these was the meeting of the APCO Global Alliance for Global Co-operation and Development which for 2009 is chaired by the BAPCO Executive Director.

The alliance is made up of APCO officials from Australasia, Canada, USA and Britain and the aim, as the title implies, is to foster international co-operation and the development of user led associations in those countries where such organisations do not exist.

Although still very much in its infancy having only been in existence for two years, there was a full agenda and the topics discussed included: telematics; future spectrum requirements and global harmonisation; training and accreditation standards; public warning systems: SIM-less call blocking; interoperability.

It is amazing that the same ICT issues that we are addressing here in Britain are those that are also being addressed in all other parts of the globe.

The APCOA Conference and Exhibition itself began with a minute's silence in which to remember all those who suffered so terribly in the appalling bush fires in February 2009 in the State of Victoria and which, at the time of the event, were still burning in some areas with a high level of threat that they could erupt again at any time.

Des Bahr, Chief Executive Officer of APCO Australasia, opened proceedings by welcoming attendees to Sydney and the impressive Exhibition and Conference Centre at the Australian Technology Park, and introducing Mr Tony Pearce, Director General Emergency Management, Australia, to officially open the Conference in which he emphasised the need for cross border co-operation and for the exchange and sharing of information.

The conference then moved into a series of seminar

presentations and workshops and, although they were delivered addressing local needs, these reflected exactly the same topics and requirements being discussed in the UK.

At a minimum of one presentation, I have to admit, I felt I had been here before. A talk on ICCS had me wondering where I had been in the last 15 years (or, indeed, where had the speaker been). It may have been my lack of true engineering knowledge and that I had missed an important piece of progressive information but, to my mind, an ICCS is an ICCS and there didn't seem to be anything in the presentation that I hadn't helped in selling many years ago to Greater Manchester Fire!

Ian Readhead, gave a masterful account of the lead BAPCO can play and is playing in the empowerment of policing through technology, giving an insight into future methodology and providing confidence that BAPCO has, indeed, become a leading influencer and team player in global APCO affairs.

The exhibition hall, a most impressive building, having once hosted the age of steam – yes, it was a locomotive factory – was a cavernous structure still demonstrating its origins, with plinths holding massive engine mounts and cast iron templates – most of which, BAPCO will be proud, if not feel slightly superior, to note were made in Manchester and Ilford!

As a summary of an interested, but largely inexpert, visitor I found the ambience of APCO in general, and the Conference and Exhibition in particular, very informative, very friendly and an enthusiastic family of like-minded groups who, together, will make a highly influential pressure group to guide and steer policies which, until now, perhaps, because of individual aims and aspirations, could be construed as lacking focus. Keeping this union of ours – of APCO – together will concentrate minds and make us all the stronger and a force to be reckoned with. I wish all the members and member groups a strong future.



*Colin Evans found Sydney a sunny, vibrant city with every kind of attraction, ranging from a world-class aquarium, themed restaurants wildlife exhibitions, to the stunning Harbour Bridge and Opera House.*



# Meeting the challenges in Hyderabad head-on

*Past President Ian Readhead addressed the Emergency Management and Research Institute in Hyderabad, India, where he discovered the huge challenge currently facing colleagues in India.*



*“Although recent problems have occurred with some of the technical providers associated with EMRI, the road ahead is still one of huge optimism. It is hoped that by 2011, EMRI will attend over 30 million emergencies and will have saved 1 million lives.”*

Of all the presentations I was asked to undertake whilst the President of BAPCO, the one which most vividly stands in my mind was an opportunity to address the Emergency Management and Research Institute (EMRI) in Hyderabad, India. Although the purpose of my talk was to focus upon the manner in which the emergency services in the UK dealt with mass emergencies, it seemed to pale into insignificance as I observed the huge challenge facing colleagues in India as they develop an emergency response service in a public private partnership (PPP), utilising a three digit emergency phone number (108) in most provinces in India.

For those who have not had the opportunity of visiting a city in India, it would be right for me to describe the conundrum for such provision. Hyderabad city – the capital of the state of Andhra Pradesh in India – is one such province, with a population of 6.5 million and occupying the same land area as the city of Chicago, but with a population of only 1.3 million. Vehicle use ranges from camel, ox drawn carts, mules, pedal cycles, scooters, motor cycles, three wheel taxis, cars, buses and lorries.

Not a single inch of the road is left open, the use of the horn is frequent, seat belts do not seem to be used. Pillion passengers on motor cycles – frequently female – ride side saddle, holding children between them, the rider, the rear mud guard and with the added complication of a child on the petrol tank and handle bars.

If this was not sufficient there seems to be a bizarre range of rules which allows drivers to also travel against the flow of traffic if that seems more convenient than following one way systems. Hardly surprising therefore that the rate of serious injuries and fatalities on Hyderabad’s roads alone are so high. Added to this is the complexity that once outside the city, many of India’s residents live in rural locations which are hard to reach and where historically utilisation of the health service has not been the norm.

In 2005 an ambitious project was commenced aimed at moving towards a state of the art ambulance emergency response service in Andhra Pradesh. The aim was to start within Hyderabad but then to cover the entire state within three years. Assistance was sought via the National Emergency Number Association, which operates the 911 emergency number in America. The technological

challenge was to provide a similar service to 1.1 billion people throughout India.

Significant public and political support was mobilised, the state government recognised EMRI as the primary agency to provide emergency response. The target set was to provide 502 ambulances using a single centralised integrated response centre located on the outskirts of Hyderabad to cater for the needs of the population of 80m.

In order to support this structure it was recognised that a Research and Institute Training Centre would be an integral component of the overall solution. Significant capital investment was therefore made at the Hyderabad operating centre in order to ensure that bespoke ambulances were supplied with well-trained personnel able to operate all the systems contained therein.

Governance of the overall project was assisted by the participation of significant political figures such as the former President of India, Dr APJ Abdul Kalam. Given that the non-profit EMRI was founded by successful entrepreneurs, heavy emphasis was placed on monitoring the volumetrics and ensuring that performance management was a feature of the growing service.

It is estimated that as a result of the integrated and seamless operations, providing an active response to emergency calls has saved over 30,000 lives. An added feature which has undoubtedly contributed to this remarkable figure is the provision of a doctor in every call centre able to give advice to frontline operatives. The organisation now has 13,000 employees, working from dedicated hospitals, covering 367m people in communities across a number of states. Over 10,000 emergency calls are handled every day with over 1,872 ambulances providing high quality service requiring arrival at scenes within 14 mins in urban areas and 21 mins in a rural environment.

EMRI has always believed in partnerships with the best in the world and has had critical alliances and partnerships with global leaders in emergency response to enhance and build value by sharing experiences to assist in developing solutions. Although recent problems have occurred with some of the technical providers associated with EMRI, the road ahead is still one of huge optimism. It is hoped that by 2011, EMRI will attend over 30 million emergencies and will have saved 1 million lives.



## Do you need dedicated PC hardware for your vehicle fleet?

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