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EDITORIAL

Real value for money

What effect will the credit crunch have on police technology spending at a local, national and international level? There are already signs that some forces locked into expensive contracts with suppliers that charge large annual service fees are looking at cheaper alternatives to achieve the same sort of functionality.

Meanwhile, large and expensive national projects that are yet to get off the ground and have to go through lengthy tendering arrangements are looking harder to justify. The process of 'competitive dialogue', where companies or consortia bidding for government business have to set out their stalls separately at regular meetings with the customer before a decision is made, looks to be increasingly expensive and wasteful.

In any large IT project, spiraling costs are often blamed on suppliers and the consultants brought in to achieve implementation of the system using 'best value' principles. But a large part of the problem starts with a lack of a clear vision or system requirement from the customer. And nowhere is this lack of clarity better demonstrated than at international level. Biometrics used for identity documents and systems within the important field of border security is a prime example of this.

Within the EU, for example, the preferred biometric of the European Commission is fingerprints and there are various standards established for implementing such systems. But these are extremely difficult to enforce and, as the man responsible for large IT systems within the Commission explains on page 26, some countries have already gone down a different biometric route.

An awful lot of money is wasted on duplicated systems or systems that have fallen short of what police and other government agencies require. At a time when funding is being slashed to deal with the health of the economy, the real – as opposed to perceived – value of technology will be harder than ever to prove.

Gary Mason
Editor, Police Product Review

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Jane's POLICE Product Review

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Help in fight against child porn

UK force has cut huge backlog using new Triage ID scanning software

SOFTWARE designed to scan suspects' computers for child pornography has been praised for helping cut a huge workload.

Nottinghamshire Police were the first force in the UK to use Triage ID, although other forces are now following in their path.

Nottinghamshire spent £20,000 on a number of licences for the software but officers claim the investment has already paid dividends by cutting a huge backlog – and helping catch paedophiles.

Det Insp Gerard Milano, of Nottingham's dangerous persons management unit, said: 'This software can identify in a day indecent images that may have previously taken officers up to a year to get to because of their volume of work. It is a fantastic and relatively cheap piece of technology.'

Since it was introduced three months ago, the number of computers waiting to be checked by the force has fallen from 223 to fewer than 180 – a drop of 20 per cent. In October, Nottingham Crown Court heard how Triage ID helped catch a man with more than 500 pornographic images of children on his computer after being tipped off by an internet service provider.

Triage ID, which is produced by US-based ADF Solutions, is used by 700 clients in the US, including New York and Miami police departments. US customs and border patrol officers are also using Triage ID to check laptops brought into the country for a range of material, including child pornography and terrorist-related information. The system can also be used to help manage sex offenders.

Nottinghamshire Constabulary/1350089

EASING WORKLOAD: Officers can now scan computers much faster

EU commissioner's checkpoint policy at the frontier of modern biometric thinking

AUTOMATIC border identity checking systems could be the solution to working time regulations and over-manning at frontier posts and airports, according to a leading European technology expert.

Frank Paul, head of the large-scale IT systems unit at the European Commission, explained that union agreements in France mean no police and border official should work more than 35 hours per week. This means, at a busy 24-hour border post, the authorities need 100 people to cover one person's duties across a week's worth of shifts.

Mr Paul said that automatic gates that check fingerprints, passports and other identity documents would 'dramatically reduce' the cost of manpower at each post. He added that one officer would be able to supervise 20 automated border gates, which would reduce the manpower overhead from 100 officers to five.

But he also warned that the biometric industry would need to find ways of combating the problem of 'spoofing', whereby criminals and fraudsters attempt to use false documents and fingerprints to overcome the automated checking process.

Liveness detection built into readers – which assesses whether the finger tip is real – would help defeat spoofing scams.

'I believe that most public administrations will insist on liveness detection within a few years and not enough has been done in this field by the industry yet,' Mr Paul said.

■ See Biometric barriers, page 26

PA Photos/1306895

FINGERPRINT FOR SUCCESS: Biometric borders are the key

NEWS IN BRIEF

Calling for back-up

DEVON and Cornwall Constabulary in the UK has procured CommVault Simpana software to store sensitive records.

Malcolm Waite, project leader for the force, explained how the new software has helped Devon and Cornwall Constabulary resolve a number of issues with the back-up system.

He said: 'Back-up and recovery is a key business issue and CommVault has helped simplify the process for us. We now have just one system to manage, instead of the previous five.'

'The infrastructure team was spending more and more time resolving issues and discrepancies between the back-ups and the back-up reports.'

Not so niche any more

LINCOLNSHIRE Police will be the next UK force to implement Niche's Records Management System (RMS).

This will bring the total number of UK forces using the system up to 11 – more than 25 per cent.

Canada-based Niche will begin installing the system immediately with the goal of going live with the crime, intelligence and property functionalities by July 2009. The force has approximately 1,220 officers, 884 staff and 159 community support officers.

Blurring boundaries

THE US Transportation Security Administration (TSA) has procured 30 checkpoint security systems that use millimetre wave technology to identify concealed objects as part of an existing contract worth $24 million.

TSA tested the ProVision system at Los Angeles, New York's John F Kennedy and Phoenix Sky Harbor international airports.

To help ensure privacy, the product generates an image that resembles a fuzzy photo negative and all faces are blurred.

Intelligence prevails as pilot is extended

Police in Brandenburg, Germany, will continue to use ANPR and mobile phone tracking systems

BRANDENBURG police will continue to pilot the use of automatic number plate recognition (ANPR) and mobile phone tracking systems after the state government agreed to put forward proposals to extend fixed-term state legislation permitting use of the technolgy for another three years.

It is now up to the state parliament to ratify the proposals.

While different regulations concerning ANPR from two other German states, Hesse and Schleswig-Holstein, were scrapped by the German Federal Constitutional Court at the beginning of this year, the regulations from Brandenburg Police Department were able to withstand a legal challenge.

Officers in Brandenburg are only allowed to use both techniques in exceptional cases and judges have to approve the use of ANPR and scanners for mobile phone tracking prior to their use.

These conditions mean that the eastern German state is in accordance with the decision of the Federal Constitutional Judges that ANPR can only be used very selectively by the police. In Brandenburg mobile phone tracking is, for instance, used only in cases where there is an immediate threat of serious crime.

According to the state's home office, in 2007 the technique was used 246 times to locate missing persons, and the ANPR system was used in three criminal cases last year.

While, Joerg Schoenbohm, Brandenburg's conservative home secretary, wanted to implement new unlimited legislation this year, the concerns of his Social Democratic coalition partners made him alter this plan. 'It is important, that the police do not lose important investigation tools to prevent danger,' Mr Schoenbohm said, but he added that the two years of evaluation had, in fact, been enough.

The new legislation is now supposed to allow Brandenburg Police to use its ANPR and mobile phone tracking in special cases until 31 December 2011.

With this fixed-term law in place, the government intends to wait for the results of ongoing legal discussions at federal and EU level before enacting an unlimited regulation.

Borderpol calls for International Passport Cards

BORDERPOL is calling for the development of an international identification card to augment national passports and radically improve cross-border security

The European border policing agency said the cards are needed because passport and travel identification systems are unable to cope with the demands of international traffic management.

A spokesman for the agency said: 'Over the past five years the advancement of various national and regional systems to facilitate enforcement and trade has grown without any interoperability or any measureable improvement in the management of international traffic. With time-wasting line-ups at airports and border crossings travel, trade and tourism are being negatively affected.'

Borderpol is attempting to promote a global initiative called the International Passport Card. The agency believes will make it possible to create dramatically more efficient and effective border clearance systems.

Carbon Motors/1338809

Is this the car that officers want?

A POLICE car 'designed by cops for cops' was unveiled at the International Association of Chiefs of Police conference in San Diego, US, this month.

The manufacturer, Carbon Motors claims, the custom built E7, which can run on biofuels and carries sensors to help detect radiation and biological threats, is the product of a police 'think tank' comprising more than 1,700 officers. William Santana Li, chairman and chief executive officer of Carbon Motors Corporation, said: 'The military has long used purpose-built vehicles to accomplish their unique missions. Fire engines were specifically designed to provide firefighters with water, aerial ladders or other equipment to assist them in rescue work. Law enforcement, by comparison, has had to settle for retail cars designed for ordinary passenger use with haphazardly and dangerously installed law enforcement equipment.'

Biometrics on French frontline

THE French government is looking to roll out mobile biometric readers to the 'bobby on the beat' in order to check identity documents, according to a senior police officer.

Ch Supt Jean-Luc Aminot of the French National Police told the Biometrics 2008 conference in London in October that France was at 'a very early stage' in this ambitious programme.

Ch Supt Aminot has been seconded to the French Secure Documents Agency (ANTS), which is responsible for procuring technology that would aid law enforcement and immigration agencies.

He said the agency was set up in February last year by the French government and has a staff of 100 based in Paris. France is looking to introduce an e-ID card for all citizens, with the first prototype due to be in use by 2009.

Ch Supt Aminot told the conference that biometric devices needed to be able to interoperate on a European scale to deal with the complex problems of illegal immigration and identity fraud.

Contract award for drink/drive rehabilitation

A COMMERCIAL driver training company has been given a contract to run drink/drive rehabilitation courses in Northern Ireland.

The TTC Group, which is based in Shropshire, will start to deliver courses from the end of November.

Convicted drink/drivers who volunteer for the two and a half day course will have their driving ban reduced by up to a quarter upon successful completion.

The course lasts just over 18 hours and participants will learn how alcohol is stronger and served in larger measures, how one-in-five drink/drivers are caught the morning after, how to calculate units, the health impact of drinking, and the effect their actions can have on drink/drive victims.

The UK's Transport Research Laboratory found that people who attend the course are much less likely to re-offend.

Sammy Wilson, Northern Ireland's environment minister, praised the previous course organiser, the Probation Board for Northern Ireland, for its role in developing and providing the courses introduced in 1998.

He said: 'I appreciate the real benefits of the courses provided by the Probation Board in Northern Ireland and recognise the commitment made by this organisation over the last 10 years.

'Re-conviction rates of participants who attend this course are almost four times lower compared with those who were considered by a court to be suitable but failed to enrol for a course.

'There is little doubt that this level of success is due in no small measure to the quality of the courses and the dedication of the teams involved.'

ON PATROL: The electric scooter Lothian and Borders Police are using to patrol the Scottish Parliament

Lothian & Borders Police/1338018

Parliament driving fight against pollution

LOTHIAN and Borders Police officers are using an electric scooter to patrol the new Scottish Parliament building in Edinburgh.

The procurement of a Vectrix electric maxi-scooter is part of the force's drive to reduce transport emissions and traffic congestion in Scotland's capital.

The scooter is the first electric vehicle to be procured by the force. Two or three officers will be trained to use the Vectrix which will directly replace a petrol patrol car covering 20 to 30 miles daily.

It will be used for patrolling the Scottish Parliamentary areas and for transporting officers up to police headquarters in central Edinburgh. There is a large proportion of pedestrians in and around the Parliament Buildings and the Vectrix will provide a safe, yet more humanly interactive method of patrolling without inflicting noise or air pollution on the vicinity.

Edinburgh is a hilly city and therefore an electric car would not have the power or range to withstand the undulating environment.

Dignan McCulloch, fleet manager for Lothian and Borders Police, said: 'Organisations across the country are focusing on improving their carbon footprint. The implementation of the Vectrix as a direct replacement for a car goes a long way in helping us to reduce our carbon output. It is very easy to use and has excellent visibility. We are looking forward to putting the bike into service and exploring other opportunities for further implementing Vectrix bikes, both at Edinburgh Airport and the Royal Infirmary.'

In 2001 the force became the first in Scotland to be awarded energy efficiency accreditation by the National Energy Foundation. Transport energy savings are encouraged by promoting diverse forms of transport, such as walking, cycling, rail and bus.

Lothian and Borders Police is the second force in Scotland to invest in the Vectrix technology. Strathclyde Police already uses two Vectrix maxi-scooters to patrol BAA Glasgow Airport.

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THE PHOTO EXPERTS

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IT'S WHERE THE PROS GO

Keeping track of laptop thefts in Nottingham

POLICE in Nottingham have come up with a hi-tech solution to the growing problem of laptop computers being stolen.

Last year, 665 laptops were taken in burglaries in the city. But now people living in the worst affected areas are being offered free software that will help police officers track down their stolen property.

It is also hoped the scheme will deter thieves from stealing equipment that could lead police to their door. The ComputraceOne system features a hidden tracking signal sent from the laptop over the internet to a monitoring centre. The software also allows the owner to remotely delete any sensitive or confidential information. The system takes up just 100 kb of disc space and is hard-wired in, making it virtually impossible to remove.

The software, which is produced by Absolute Software, usually costs around £25-per-year to buy. The company supplies around 10 forces and, using various grants, they are able to pass the software on to schools and other organisations at risk of having laptops stolen.

Nottinghamshire Police, the Crime and Drugs Partnership and other agencies are now offering the system to thousands of people in Nottingham. Det Insp Sean Anderson, who developed the initiative, said: 'This software will provide a peace of mind for many students and members of public who are concerned about work and files stored on their laptops.

'People often forget to back up information on laptops and if they are stolen, then it is lost forever.'

Absolute Software claims their system has led to the recovery of more than 6,000 lost or stolen laptops.

Merseyside Constabulary/1338052

IMAGE CAPTURE: Merseyside Police's Simon Byrne (left) and Simon Furnivall, of the force's IT team

Suite way to identify suspects in custody

POLICE forces across the UK could soon be benefiting from the latest technology aimed at combating criminals who try to hide their identity.

Officers in Merseyside Police have spent the last year pioneering a system that takes particularly high-quality photographs of suspects.

The Digital Image Booths, which are designed to be well-lit and have the suspect looking in exactly the right direction, have been fitted in all nine custody suites on Merseyside. The force is also using cameras that photograph suspects as they arrive in the 'airlock' rooms, prior to being checked into custody suites. Within seconds, the computer is able to search a database of 250,000 pictures to see if it matches people with a similar appearance.

The system uses a number of techniques, including measuring the distances between features such as eyes, nose, mouth and cheekbones. Within seconds, officers will see whether the picture has been matched to a person known to them and, therefore, whether they have the correct details. They can also access information on whether the person has a history of violence or self-harm.

Not only does the system reduce the danger to officers, it also helps speed up the arrest process. Once recognised, the prisoner's details can be called up, without the officer having to type them in again. The software is provided by Guildford-based OmniPerception, with the booths built and distributed by DW Group, based in Milton Keynes. The companies say they have had interest from around 20 forces, with orders already received from Hertfordshire, City of London, North Wales and Tayside police.

Supt Ngaire Waine, Merseyside Police's lead on technology, said: 'A lot of people give false identities and it is very hard to hide your true identity with this system. The sooner you know who someone is, the sooner you know if they are a danger to themselves or others.

'This system will speed up the custody process and allow the officer to get back on patrol.'

Fingerprint transmission moves up a gear

A SYSTEM created by officers who wanted to identify fingerprints more quickly is being rolled out across the country.

Lincolnshire Police first began using 'remote fingerprint transmissions' in 2004. Officers were frustrated by the old-fashioned method of posting fingerprints lifts to headquarters and then having to wait days for a result.

The new system means the fingerprints can be matched in a matter of hours, giving frontline officers a better chance of catching offenders. The officers use an ordinary scanner, but had to find a way to save the images correctly. An ordinary j-peg format is prone to distorting the fingerprint and the team discovered that a j-peg 2000 format was better.

Ian Gledhill, Lincolnshire Police's head of fingerprints, said: 'It is a very simple system. I was amazed it had never been done before. It is the software that is clever. Sheffield University came up with software that allows you to scan the fingerprint lift and produce a j-peg 2000 image that is compressed at a ratio of 15 to one. It is then transferred to the fingerprint department via the force's own computer network, rather than using email.

'The National Policing Improvement Agency was so impressed that they initiated a project to roll it out to all forces.'

Scottish drive to exploit ANPR intelligence

LOTHIAN and Borders police officers claim they are catching dozens of criminals by exploiting the huge amount of intelligence gathered by automatic number plate recognition (ANPR) systems.

While traditional ANPR equipment is normally used to catch motorists driving without licences or insurance, Lothian and Borders Police has managed to move the system up a gear.

Experts working for the force have designed software that allows officers to use vast amounts of information that would otherwise never be used.

Lothian & Borders Police/1338011

RECOGNISE THIS: Forces in Scotland are making better use of data

Lothian and Borders Police said the equipment has helped solve hundreds of cases – including one murder – since it was developed two years ago. And now the force has joined forces with Northgate Public Services to sell the Insight software nationwide – with the force getting a percentage of the income. Although Central Scotland Police is the only force to have adopted the Lothian and Borders system so far, it is believed many more forces could soon be buying Insight.

The system was developed by PC Curtis Muir from Lothian and Borders' ANPR team, along with colleagues from the IT department. They spent around a year developing Insight and ensuring it complied with the Data Protection Act 1998 and other legislation.

Lothian and Borders' ANPR equipment alone records more than 40 million number plates every year. Of these, around two per cent result in 'hits' that trigger an alarm because the number plate is connected to a vehicle that is uninsured or suspected of being owned by a banned driver.

Now the Insight software allows officers to access the remaining 98 per cent of number plates. For example, if a detective is investigating a robbery and wants to find out more about a white van seen in the area, he can simply email his request to the ANPR team and, within hours, they will give him a list of vehicles that may be of interest.

Supt George Bird, head of operational planning and in charge of the ANPR unit when the system was developed, said: 'It is a way of finding a needle in a haystack. It's been used to solve dozens of cases, ranging from bogus workmen who prey on the elderly, to house break-ins. 'It's even been used on murder inquiries.'

Secure Motorola GPS radios rolled out in Northumbria

POLICE in Northumbria, have taken delivery of new radios equipped with the latest security technology.

The MTP850 TETRA terminals are designed to meet stringent new rules regarding Airwave security that come into force next year.

Motorola/1338010

SECURE: The new handset

And manufacturers Motorola say they are also the first radios to come fitted with GPS and high-quality screens that allow photographs of suspects and missing persons to be sent to officers on the ground. Northumbria Police has purchased 4,600 terminals, although both the force and Motorola have declined to reveal how much the deal is worth.

Northumbria Police is the first force in the UK to take delivery of the MTP850.

Airport scanners failing to pick up 'tailgaters'

UNION leaders have raised fears over facial recognition scanners on trial at Manchester Airport.

The equipment fails to spot two people passing through at the same time, according to the Public and Commercial Services Union (PCS).

When immigration officers have accompanied passengers through the electronic gates, the system has failed to register them. And now the union has called for the trial to be suspended so more detailed tests can be carried out.

The equipment is part of a £1.2 billion programme to tighten security and prevent terrorists and other criminals sneaking in and out of Britain. The scanners are designed to work with the 13 million biometric passports currently in use in the UK.

The Government claims they will also make travel easier for law-abiding citizens and there are plans to bring in similar systems at other airports. Steve Taylor, PCS spokesman, said: 'They should not have gone live with this before doing more tests. Immigration officers, on at least two occasions, have been able to tailgate passengers.'

A UK Border Agency spokesman said: 'Anyone travelling through these gates is subject to the same checks as the current manual controls.'

The six-month trial was launched at Manchester in August, with a similar system planned for Stansted in October.

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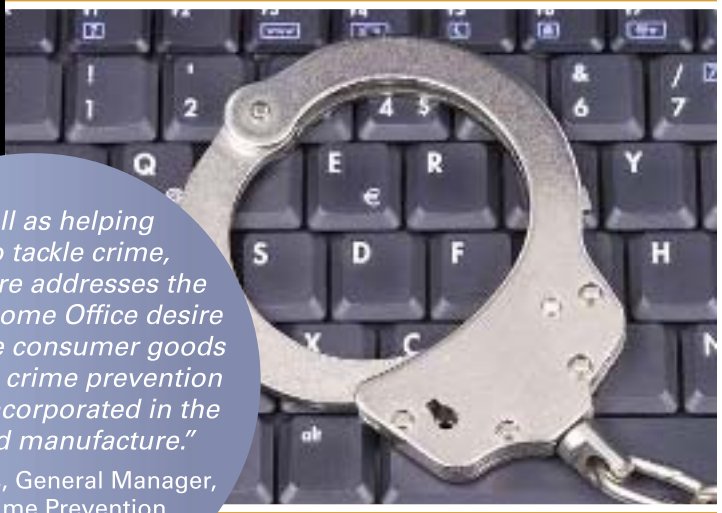

"As well as helping police to tackle crime, this software addresses the ACPO and Home Office desire that valuable consumer goods should have crime prevention measures incorporated in the design and manufacture."

Alan McInnes, General Manager, ACPO Crime Prevention Initiatives (CPI).

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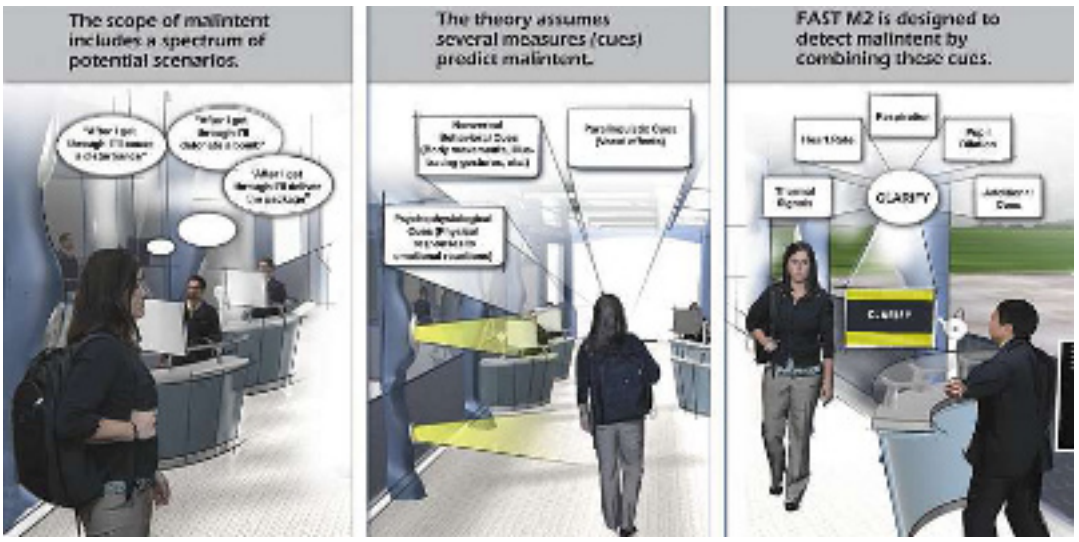
Screening system reads mind over matter

SECURITY scanners designed to catch terrorists by 'reading minds' are being tested in the US.

The Malintent system uses a series of sensors to measure a person's heart rate, temperature and breathing.

The equipment was recently tested by the US government's Department of Homeland Security (DHS) and a company called Draper Laboratory on 100 volunteers in Maryland.

The system is part of an initiative known as Future Attribute Screening Technology (FAST), which focuses on behaviour rather than screening for threatening devices, such as weaponry.



Malintent/1338012

STEPPING UP: The Malintent system goes through several stages to screen for potential security threats

While there are no immediate plans to use the equipment, developers claim it can distinguish between a terrorist and someone who is merely stressed because they have been rushing to catch a flight. Bob Burns, Malintent project leader, said: 'The equipment analyses you against baseline stats. It measures reactions and variations when you go through the portal door.' John Verrico, a DHS spokesman, said: 'The goal of the FAST system is to provide additional tools to screening agents to help them determine potential malintent of individuals entering a facility. The FAST system focuses strictly on psycho-physiological and behaviour attributes displayed in near-real time and utilises no personal data information, nor does it collect personal identification data.'

Call for protection of biographical data

US privacy laws have not kept pace with the development of biometric technology and the proliferation of giant databases containing vast amounts of personal information, a senior biometrics figure has warned.

Russ Ryan, vice president for information and communication at the National Biometric Security Project (NBSP), told a conference in London in October that biometric companies need to toughen their approach to developing systems that secure not only biometric information, but the personal biographical details that are attached to it.

'As we capture biometrics we are also capturing a ton of biographic data,' he told delegates at the Biometrics 2008 conference in Westminster. 'It is almost a larger challenge to protect the biographical information than it is to protect the biometric information.' Mr Ryan said that the problem was made worse by privacy legislation in the US making very limited reference to technology, because the statutes are so old.

istockphoto/1304520

DNA PRIVACY: It is important to safeguard biometric data

'The key privacy law in the US today is the Privacy Act of 1974,' he said. 'It has been augmented a number of times but its key provision is that no personal information can be exchanged between federal agencies without the expressed written consent of the individual concerned.'

Although some government agencies, such as the CIA, are exempt from this provision, Mr Ryan said uncertainty surrounding the legislation was a 'slippery slope' given the amount of personal data that was being captured.

He said the cost of identity theft in the US in 2006 approached $100 billion and, as concerns about the cost of fraud grow, traditional biometric databases that include both biometric and biographical data would become more of a problem.

'One of the keys to solving the problem is to physically and logically isolate biographic data from biometric data,' he said. 'As these databases grow I think there is an increasing unwillingness on the part of organisations that maintain those databases to share that information because of privacy concerns.'

'Anonymous' ID checks gain recognition

THE National Biometric Security Project (NBSP) is developing a system that will use 'anonymous recognition' to check individual identity without accessing personal data.

Russ Ryan, a senior figure working on the project, said that it will use a third party database to enter biometric details and an encrypted code. All the biographical information and situational analysis background data is retained by the subscribing organisation.

The third party database authenticates each check using the biometric and a personal reference code. Mr Ryan said: 'The US and a number of EU countries are looking at the possibility of this process working in a data sharing capacity for border security.'

Using DNA for volume crime not so costly

THE use of DNA technology to combat high-volume property crime such as burglary and theft from vehicles can cost as little as $3,700 for each new arrest, a study carried out by the National Institute of Justice (NIJ) has shown.

Five US police departments took part in the study, which used federal money to carry out the analysis. The study revealed that when DNA was added to traditional property crime investigations more than twice as many suspects were identified and arrested.

David Hagy, director of the NIJ, said that the results could dramatically improve the clear-up rate for property crime.

'In 2006 out of 2.1 million burglaries nationally only 12 per cent were solved using traditional investigative methods,' he said.

One problem with using DNA on volume crime has been the big backlog of samples taken from crime scenes for murder and sex cases, which have not been analysed, Mr Hagy explained. Some of the money released through the President's DNA initiative had gone towards reducing those backlogs, he added.

Mr Hagy said the research had shown that each new arrest cost 'as little as $3,700', although that did not include the cost of incarceration.

He also stressed that the project was not just about taking minor criminals off the streets.

'The kind of people you are dealing with are much more serious criminals – these are three strikes guys,' he said.

The study was carried out at police departments in Orange County in California, Los Angeles, Denver, Phoenix and Topeka in Kansas.

Danny Lawson/1292554

SUFFICIENT FORCE? Research concludes that a single Taser discharge is not always effective enough

Report condones repeated use of Tasers

MULTIPLE use of Taser less-lethal weapons against a suspect may be necessary to be effective, a research study has concluded.

The report by the Florida Gulf Coast University Weapons and Equipment Research Institute follows a five-year research project partly funded by the US Department of Justice.

It concluded that the performance of the weapons' probes increase over multiple uses and that a single discharge of the weapon will not always be enough to overcome suspect resistance.

'Taser International has maintained that multiple applications may be necessary and the individual officer must decide whether additional force is required,' the report said. 'Despite negative media coverage touting abuse, multiple Taser deployments may be necessary to obtain the effectiveness that agencies are seeking.'

The study examined the use of force levels by the police and subject resistance levels in two law enforcement agencies in Central Florida – the Orange County Sheriff's Office (OCSO), and the Orlando Police Department (OPD).

Researchers identified the phenomenon of what they call 'force deficit' in which it appears as though officers are consistently using less force than may be justifiable or necessary to subdue the suspect and end the confrontation. 'This may be an unintended consequence of their training,' the study said. 'This immediately begets the conclusion that the law enforcement community has a duty to use sufficient levels of less-lethal force (and in some cases deadly force), at a legally acceptable level (equal or greater to that of the subject's level of resistance), quickly and decisively at the onset of a conflict.

'This may cause concern to some, especially if there is community distrust in the police. However, when properly administered in the hands of a legitimate police organisation they may in fact be reducing injuries to all parties.'

The report concluded: 'While Tasers are not injury-free, the alternative (broken bones from batons, burning pain from pepper spray, and potential death from firearm) makes them a preferential choice.'

Denver police dept are Delta strong hand

PROTECTIVE helmets made with strengthened Dyneema material are being used by the Denver Police Department in Colorado.

The force is the first US organisation to adopt the new Protech Delta LT helmets, which meet the National Institute of Justice (NIJ) IIIA specifications and are 15 per cent lighter in weight than comparable aramid helmets.

The helmets feature Dyneema UD, which is made of several layers of Dyneema fibres, with the direction of fibres in each layer placed perpendicular to those in the adjacent layers.

This unidirectional configuration allows the energy transferred from the impact of a bullet, or other threats, to be distributed along the fibres much more rapidly and efficiently than in conventional woven fabrics.

Dyneema/1338308

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Hamburg Police/1338013

GOING DIGITAL: Police and rescue organisations will soon be ready

Digital network nears completion

GERMANY'S police and rescue organisations will be a step closer to digital radio when the city of Hamburg completes the necessary infrastructure build-up for its sector of the national digital network by the end of this year.

Hamburg will be the second city to go live with the system following Berlin's completed phase earlier this year.

The construction of all necessary base stations within the state boundaries started in June 2007 together with an evaluation phase of the new system, which is expected to change into an extended trial run of the digital radio network by July next year. This will last until 2010 when standard operation is expected to begin.

Currently, police and rescue services in Hamburg are using around 270 digital radio units for their evaluation phase. After completion of the network infrastructure, in early 2009, the state government will issue a tender for a total of 10,000 devices for use within the different services.

Walther's P99 Q wins tender for new handguns

AFTER a Europe-wide tendering process that led to a shortlist of four manufacuters, the state government of Rhineland-Palatine has made a decision about its new standard issue police handgun.

The home office chose the P99 Q by German manufacturer Walther in September.

While the first batch has already been delivered to weapon technicians as well as handgun and mission instructors this November, the first regular police officers will begin training with the new pistols at the beginning of 2009. The exchange of all 10,000 handguns in the inventory is expected to take until the end of 2011.

The overall cost for this procurement of weapons and additional equipment, like holsters, adds up to around €6.8 million. 'This is a reasonable and necessary investment in modern and good police equipment,' home secretary Karl Bruch said. 'The old Walther P5 standard police handguns have been in service for about three decades by now.'

First mobile TATP detector will help to tackle terrorist threats

SCIENTISTS in Germany have developed a mobile device to detect traces of the explosive triacetone triperoxide (TATP) – a substance that has been used in a number of recent terrorist attacks, including the 7 July 2005 attacks on London.

Dr Siegfried Waldvogel, from the University of Bonn, together with the Max Planck Institute in Mainz, developed the odemS, which is the first mobile detector of traces of TATP in the air.

This new modular system is a gas-phase sensor based on quartz micro balances.

The sensor, which is about the size of a €1 coin, uses the balances to detect traces from the explosive in the air.

Using a special substance, the TATP molecules keep sticking to three small golden plates and this change of weight can be measured.

Because of its new method, the odemS does not need any additional substances for the verification and, therefore, allows a quick and continuous examination of people and material on-scene.

According to its developers, the sensor can measure very tiny amounts of TATP – a few parts per billion.

Max Planck Institute/1338014

C'EST BONN: The odemS detection device developed by scientists at the University of Bonn and the Max Planck Institute in Mainz

A prototype for a handheld version of the detection system already exists, which could be used for the direct examination of cars, people or other material.

It shows the contamination with TATP by using three LED lights. One further use for the odemS could be the continuous check of people passing through an airlock. Because of its modularity, the system can also easily be adapted to detect other materials.

In addition it uses mostly standard electronic components, which keep the production costs under €1,000.

The system has been patented by the company PROvendis, which will market the licenses, and a prototype of the odemS has already been successfully tested by the German military.

Bavarian Motorway Police/1338016

BRIGHT IDEAS: A police officer wearing the trial uniform and a patrol car with the new flashing lights

Motorway police get a flashy new look

AUTHORITIES in the southern German state of Bavaria have approved new uniforms and lighting equipment for motorway police following a review of the deaths of two officers killed in motorway crashes in July 2006.

As well as changes in the training courses for all traffic officers in the region, the state government has started to introduce a new LED flashing light system with a higher visibility rate for patrol cars.

New foldable roof-mounted LED signal systems have also been tested for the police vans of the motorway police.

These 1 m^2 large signs can, for example, display different traffic signs, directional arrows or text messages.

Alongside the new training methods, flashing lights and warning lights, Bavaria's home office is also trying to enhance the visibility of its motorway police officers themselves.

To achieve this, in September last year it started a one-year pilot project with a new special uniform completely made out of a reflecting bright neon yellow fabric.

Officials at the state's home office are evaluating the outcome of the test campaign with the new clothing before taking further steps. Meanwhile, a decision concerning the new roof-mounted signal systems has been made and a tender for approximately 12 such systems is set to be issued.

Livescan technique proving to be real hit

THREE years after the start of a pilot in the cities of Cologne, Gelsenkirchen and Münster, all police authorities in North Rhine-Westphalia have now finished introducing the Livescan technique for capturing fingerprints or palm prints.

Now the prints are taken electronically with the LS 1 LITE-Ue scanner from Cross Match Technologies, without any need for ink and paper. Furthermore, North Rhine-Westphalia's police are now able to instantly compare a suspect's finger or palm prints with the national database at the Federal Criminal Police Office (BKA).

This new tracing method has already shown results. During the first six months of 2008, around 6,000 quick identification requests were sent from the state police to the BKA.

According to the police, around 50 per cent of them were matches with already existing fingerprint or palm print scans.

The introduction of the new system had only one slight drawback for the police officers in North Rhine-Westphalia. Already existing data has to be re-captured for the digital police records department (DigiED-Net).

To ease this, an interface between Livescan, DigiED-Net and the tracing system, POLAS NRW, is expected to go online soon.

Union criticises failings in wake of gas injuries

INADEQUATE equipment led to the injury of seven police officers in North Rhine-Westphalia after a gas leak at a plant in Wülfrath, according to a trades union.

The regional association of the German Police Union (GdP) said officers were first to arrive at the scene of the gas leak on 25 August, but did not have protective masks in their patrol cars.

Until the beginning of 2008 the patrol cars in the western German state were equipped with protective masks but, according to the police union, they were removed because of their aging filters.

Frank Richter, union leader, said: 'If police officers themselves are exposed to a life-threatening situation because of inadequate technical equipment, they can not protect the public.'

The state government of North Rhine-Westphalia had ordered 2,300 new improved filters in the wake of another chemical accident in March this year, which were delivered during August. Marion Henkel, spokeswoman for the state's home office, said: 'This had been an immediate measure. However, the masks are stored at police stations, not in police cars, and should be taken out at the beginning of the shift.'

She added that the government is currently working on a plan to deal with such accidents in the future.

The union also claimed that inadequate training led to avoidable injuries. 'It is not sufficient enough to give advice for dealing with a chemical accident in the handbooks when the practical handling of such situations is barely practised,' Mr Richter said.

Ms Henkel denied these accusations and pointed out that the fire brigades are responsible for dealing with such accidents.

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OFF-ROAD SUPPORT: The Eurocargo 100E18WS with a trailer in tow

Strathclyde Police/1338039

Coast effective

STRATHCLYDE POLICE in the UK has taken delivery of a new four-wheel drive truck with a specially fitted crew-cab to be used by the force's underwater search unit and marine policing unit.

Supplied by Glasgow-based Iveco dealer Kerr & Smith, the Eurocargo 100E18WS will be used to transport a pod mounted on its chassis that contains both 'wet' and 'dry' rooms for use by underwater police divers when preparing to dive and after re-surfacing. It also includes an area where the team can cook a hot meal – essential in isolated locations, especially in the winter months. In addition to its factory-built crew-cab, which offers seating for a crew of up to seven people, the Eurocargo is mounted with both a winch and a tow-bar and will be used to tow a trailer carrying a 6.5 m inflatable boat.

Its off-road abilities will be essential to support the marine policing unit's remit to police 1,760 miles of coastline and 5,500 square miles of coastal waters in the area, while also ensuring the underwater search unit can transport its team and equipment to any stretch of water in the region. Alan Tait, assistant fleet manager of the Strathclyde Police transport and logistics department, explains: 'Delivering police services in the midst of Scotland's unique geography and climate requires a number of specialist units to complement traditional policing and this new Eurocargo 4x4 is an essential part of these two teams.

'The four-wheel drive truck is not only required for getting to the scene of an incident, but also to launch and recover boats into the water where there is rarely the luxury of a slipway.'

'World's fastest dual-finger scanner'

A NEW dual-finger scanner has been formally introduced to the market by Cross Match Technologies at the Biometrics 2008 Show in London, UK, in October.

According to the company, the Verifier 320 LC is the fastest, smallest and lightest device currently available on the worldwide market.

'The Verifier 320 LC will provide a full 10-fingerprint enrolment in seconds,' claims Cross Match chief executive officer and president, James Grau.

To achieve this, the scanner auto captures two flat fingers simultaneously. Compared to a single-finger scan, the images are also supposed to provide enhanced accuracy for identification and verification purposes and to deliver fast, accurate and reliable results for identification, verification and enrolment programs.

According to Cross Match, the Verifier 320 LC complies with the Federal Bureau of Investigation (FBI) Image Quality Specifications. 'We believe this industry-leading product will be a huge advantage to customers whether they are searching for identification technology for criminal or applicant purposes,' said Mr Grau.

Available with USB 2.0 connectivity, large active platen and enhanced ambient light rejection, the compact scanner is ready for integration into most biometrically-enabled security installations.

Music to the ears

A TETRA-enabled covert earpiece designed to look like earphones from an MP3 player in order not to arouse suspicion of an officer conducting undercover surveillance, has been launched by UK-based company Earcomm.

The new covert earpiece has two white earbuds, a white cable and an in-line microphone with a push-to-talk (PTT) switch – giving it a similar appearance to the earphones from an MP3 player.

The earpiece is designed for use by local authorities, police and emergency services working within custodial institutions, airports, seaports and border controls.

The earpieces are compatible with Tetra Airwave, Sepura and Motorola radios.

New contracts

■ West Virginia State Police in the US has renewed its contract with Digital Ally to supply in-car video surveillance systems.

The latest renewal extends the contract originally signed in January 2007 until 31 December 2009 in accordance with its original terms and conditions. The contract allows for all state, county and municipal law enforcement agencies within the state of West Virginia to purchase DVM-500 In-Car Rearview Mirror Systems under the same terms and conditions as those provided to the West Virginia State Police department.

■ Seattle Police Department in the US has signed a contract with Intermec to supply its officers with the CN3 mobile computer and Advanced Public Safety (APS) PocketParking software. The CN3 system will be used by 80 Seattle parking enforcement officers to expand data collection and tracking abilities, automate daily work logs and provide photographs for court evidence.

■ Sussex Police in the UK has selected new e-procurement software to automate the majority of the force's £60 million annual procurement activity. The new software, provided by EGS, will integrate with the force's existing enterprise resource planning (ERP) systems from SAP to streamline the purchase-to-pay processes key to buying the majority of its goods and services.

Patrol car video

AN IN-CAR video and audio system for capturing evidence from patrol cars has been developed by KCI Communications in the US.

The Mobile Video Patroller (MVP) digital video recorder combines high-resolution video with high-quality audio tracks and transfers the recordings directly to a 60 gb solid-state drive enclosed in the unit. The video files can be uploaded by the administrator via a wireless network to virtually any storage media.

The MVP can also be integrated with an existing vehicle laptop computer or as a stand-alone unit with its own touchscreen monitor. The MVP also has a 2.4 GHz wireless audio transmitter/receiver system capable of having two transmitters record simultaneously to each receiver. This is crucial in the event that two officers are partnering in a vehicle.

Detector fights 'dirty bomb' threat

LEAP FORWARD: Officials scan for radioactive material using the HPRID

Smiths Detection/1338038

A NEW handheld detection device has been developed in the UK to help officials fight against a terrorist attack with a so-called 'dirty bomb'.

The High Performance Radioisotope Identifier (HPRID) is designed to combat threats posed by the smuggling of highly enriched uranium, plutonium and other radioactive material that could be used in a radiological weapon by discriminating such threats from hotter benign radioactivity.

Developed for the use in various field inspection environments, its manufacturer Smiths Detection claims the HPRID is capable of taking faster, more accurate measurements of localised radiation. It can also detect multiple sources, determining whether the radiation is innocent or a threat, and identifies materials despite attempts to shield the radiation sources. Therefore, radiological threats can no longer be hidden behind a hotter source of radiation.

Stephen Phipson, group managing director of Smiths Detection, said: 'This detector offers a higher level of detection capabilities to military emergency response teams and will have significant application for emergency responders and for cargo and vehicle screening. Its accuracy and speed of analysis represent a significant leap forward in performance.'

The HPRID includes three types of detectors: a large sodium iodide (NaI) crystal, a neutron detector and a Geiger-Müller (GM) tube. While the latter alerts the responder to high levels of radiation, the first identifies and analyses the specific potential threat.

The detection and identification of masked or shielded threats is done by a highly sophisticated isotope detection and identification system.

New CBRN coverall with lightweight filter fabric

COVER: Polyprotect 6

Blücher/1338041

IN a chemical, biological, radiological or nuclear (CBRN) contaminated atmosphere, police forces and other first responders need full body protection over a long period of time.

According to German manufacturer Blücher, the Polyprotect 6 allows total workload duration of more than two hours in a hot climate and up to six hours in static and dynamic activities.

This multi-purpose coverall weighs less than a kilogram and is based on a new light permeable technology incorporating activated carbon spheres. The very thin and light Monopack filter material also possesses a high durability. The new filtering fabric is oil and water repellent treated and can be washed three times.

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LINK UP: The terminal allows officers to access their force's computer systems while on patrol

TERMINAL VELOCITY

The UK's Leicestershire Constabulary has dramatically increased the speed at which its officers are able to record a crime by using mobile data terminals, says **Royston Brooks-Lewis**

A vision of fully functioning hi-tech mobile police officers has been brought to life in the Midlands.

By deploying demountable mobile data terminals (MDTs) in 105 of its police vehicles, Leicestershire Constabulary's officers exploit two distinct world-beating features to improve customer service and reduce bureaucracy.

The MDT's secure remote access to the force's computer systems allows officers the freedom to self-brief while on patrol and the fully demountable terminal allows a full crime report to be created at the crime scene or from anywhere in the UK – as if the officer were sitting in a Leicestershire police station.

Leicestershire is the first force in the UK to have the capability to complete a full crime report at the scene, cutting an eight-stage recording process to just three stages, all of which can be completed on the MDT without relaying information by voice over the telephone.

The MDT solution has brought significant benefits that allow officers to remain visible and accessible in the community while also being able to access force systems. For example, direct input crime recording will now allow up to 50 per cent of the force's 90,000 per annum crime reports to be inputted from the scene.

The key business benefits realised have been officers' improved accessibility and visibility, efficiency and productivity in inputting and outputting information, and increased access to real-time intelligence – enabling frontline officers to be better informed and deliver a more personalised service to the public. Ch Supt (temporary) Jason Masters, Leicestershire Constabulary's head of corporate development, says: 'When we discovered our officers spent 31 per cent of their time back at the police station servicing the desktop by inputting and outputting information, we saw the potential to better use that time out on the streets working with the public and partner agencies to build confident communities.

'Officers can complete a full crime report from the home of the victim – a big win for the criminal justice system and victims of crime. The eight-part process of recording a crime has been reduced to just three, meaning the service received by the public is delivered to a higher standard and in a shorter time. This streamlines a seven-day recording process that involves a number of people to a much shorter one that can be completed in just half-an-hour by one officer at the scene of the crime.'

A bold bid

Leicestershire Constabulary began building its mobile data business case before the Home Office Mobile Data Bill, evaluating the business benefits of the implementation of such technology for presentation to Matt Baggott, chief constable of Leicestershire Constabulary, and Leicestershire Police Authority. It avoided some of the pitfalls of low officer uptake of the system and spiralling overspending by working closely with information management academics from the UK and Europe and by opening up the tendering process – inviting IT firms from across Europe to prove their solution worked before allowing them to bid for the account.

Through work studies and senior officer think tanks, Leicestershire Constabulary boldly stated that it wanted to deliver virtually everything that was on a desktop, such as command and control, the COMPACT missing persons system, crime intelligence systems and the voters' register while simultaneously being able to update all the systems by operating remotely.

The mobile data team set up by the force saw very early on that it was a challenge in itself to try to deliver many of the core applications on a small device, such as a personal digital assistant (PDA). This led the search for the best device to deliver the vision. Insp Sanjiv Pattani, mobile data team manager for Leicestershire Constabulary,

'Officers can complete a full crime report from the home of the victim – a big win'

said: 'The smaller the mobile device, the greater the limitations in terms of usability and information exchange. Being able to view data makes you more efficient on the street, but it is being able to input data with ease that keeps you on the street.'

Inviting IT firms from across Europe to bid for the account generated the necessary motivation for private companies to impress. As commercial competition drove creativity and innovation, the market became eager to deliver the force's concept.

Nine firms tendered for the account, with only UK company Tempus making it through to the pilot stage by delivering a

Panasonic/1338036

DEMOUNTABLE: The laptop is housed in a custom-engineered dashboard dock

concept that was both stable and durable. Tempus delivered expertise in a number of areas from hardware to engineering and the mounting of mobile devices into vehicles. It used its strong links with industry and close ties with Panasonic to deliver a Panasonic CF19 Toughbook laptop housed in a custom-engineered dashboard dock to form a mobile data terminal.

Leicestershire Constabulary's IT department then worked to make the office environment available and accessible in the field using a software technology called Citrix, which provides a gateway to a server that holds a library of up to 300 'virtual' desktops. Citrix picks out a virtual desktop and delivers it to a user through the mobile data terminal. The user sees an image of what is happening on a centrally held virtual desktop as it is 'projected' onto the screen using 3G mobile technology via the mobile phone network.

As the image is only projected, if the terminal was to be stolen no data would be left on the machine. The terminal's display is an exact re-creation of a computer desktop experience, therefore no training is necessary.

Tip of the iceberg

A full mobile data pilot took place in April 2008, which confirmed the concept worked and exceeded expectations. Leicestershire Constabulary now sees mobile data terminals as a platform that will allow the force to deliver massive business benefits in reducing bureaucracy.

Insp Pattani said: 'Delivering mobile data is the tip of the iceberg. The potential this has released is immeasurable. We recognise it is important not to rest on our laurels, with opportunities in the areas of the reduction of form filling, enabling real-time forensics and providing fingerprint recognition to each MDT by using peripheral add–ons.'

Leicestershire Constabulary is now working to maximise the potential of MDTs. The mobile data project is only one of many high-impact business change projects in the force's resource and demand programme. The force now uses its terminals to run an information resource, reference and response software programme known as iR3 – a map-based crime reference system. From the MDT, iR3 displays points of interest, such as the addresses of prolific offenders, on its interactive map. iR3 also provides officers with dynamic patrol routes in line with current demand profiles – a user experience that is similar to satellite navigation.

For Leicestershire Constabulary, mobile data technology is a platform supporting a sea change in business practice. ■

Royston Brooks-Lewis is public relations officer for Leicestershire Constabulary

THE LANCASHIRE MODEL

Lancashire Police is also using a demountable mobile data terminal in its vehicles.

Some 200 Microbus LINX PC terminals have been ordered by the force. Stuart Fillingham, head of ICT at Lancashire Police, says: 'We are looking forward to using the full functionality of LINX, which we are sure will provide a major contribution to our officers on the frontline.'

The built-in car power management system and programmable keys on the docking station allow officers to operate the 'blues and twos' and other peripheral devices, even when LINX is out of the car.

The built-in TETRA Radio Card also provides full communications over the TETRA network, even when the terminal is removed from the car.

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SPRAY AND PAY

Taggers beware, writes Gary Mason, British Transport Police officers are now using hi-tech equipment in the fight against graffiti vandalism

Graffiti vandalism is a major issue for railway operators. Vandals often look for new, more daring places to 'tag' because of peer pressure, putting themselves and others in danger.

In January last year, for example, two teenagers were killed when they ran into the path of a train at Barking station in the UK. Fatalities have also been caused by vandals stepping onto live railway tracks.

The British Transport Police (BTP) is committed to arresting graffiti vandals and working to prevent future deaths. But catching people in the act is a difficult and dangerous task. Graffiti vandalism often takes place at night or in places with bad visibility, making it difficult for police to keep track of suspects.

Patrolling officers have also found it difficult to monitor graffiti vandals hiding in bushes near railway sidings and have been restrained from carrying out searches near the tracks because of the risk to their own safety.

In September 2007, the force decided to equip some of its L division officers with Irisys thermal imaging cameras to enhance their efforts to tackle graffiti. The compact, easy to use infrared cameras can be taken on patrol and used to monitor the actions of graffiti vandals. They detect individuals by their body heat, even if they are hoping to be hidden by foliage.

Nowhere to hide

In one instance, the BTP officers were faced with a group of graffiti vandals who split up and ran in different directions to make it difficult to be caught. Thanks to the thermal imaging cameras, the police did not need to chase the group, but were able to detect them in their various hiding places.

Not only did the cameras help to track the group members, but they also allowed the officers to stand guard over the offenders' hiding places. This prevented them from leaving and allowed time for additional officers to arrive and make arrests.

Insp (operations) Andrew Jackson, is in charge of tackling the vandals for L division.

'You cannot put a price on the safety of our officers and these cameras are money well spent'

He says: 'The cameras can be used to detect people from a distance of up to 100 m, which means officers can assess a situation and call for back-up, if necessary, before getting involved. In the past, police sometimes lost track of the suspects because it was too dangerous to follow them onto railway tracks.'

Insp Jackson believes that the investment in purchasing 30 thermal imaging devices was worthwhile. Not only do the cameras provide night vision and close surveillance at the crime scene, but a long range feature means images can also be used to provide evidence in court. BTP bought the thermal imaging devices primarily to tackle graffiti crime, but officers have found a number of other useful applications.

Police officers also deal with those who gain access to the railway to steal the valuable electrical cables from tracks during the night. The theft of railway cables is a real problem for the rail network, causing signal failure that leads to train delays. The cost of replacing stolen cables and managing delays takes its toll on the rail budget and results in rising ticket prices. With thermal imaging cameras, police can tackle these crimes when it is dark.

Preventing injury

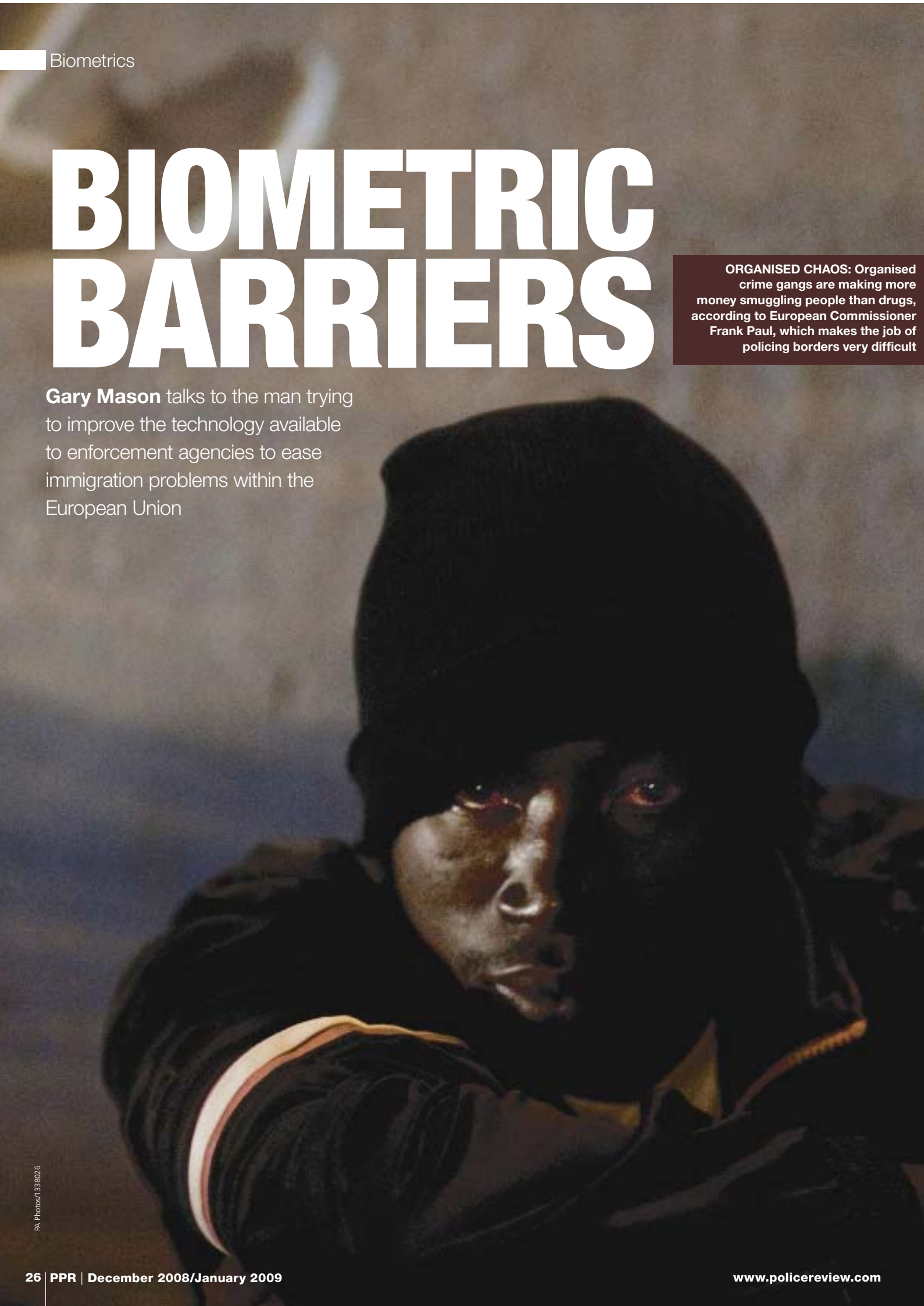
Thermal imaging can also be used to address the problem of stone-throwing on the railway. Young people compete to see who can break the most train windows and underestimate the potentially terrible consequences of such behaviour.

In recent years, there have been a number of incidents in which bricks have been thrown through train windows and train drivers and passengers were seriously injured. The cameras can help police identify where offenders may be located.

The London branch of the BTP has pioneered the cameras, however their success is becoming known around the country. Insp Jackson says: 'They have become a useful part of our kit. You cannot put a price on the safety of our officers and these cameras are money well spent in terms of the assistance and assurance they provide.' ■

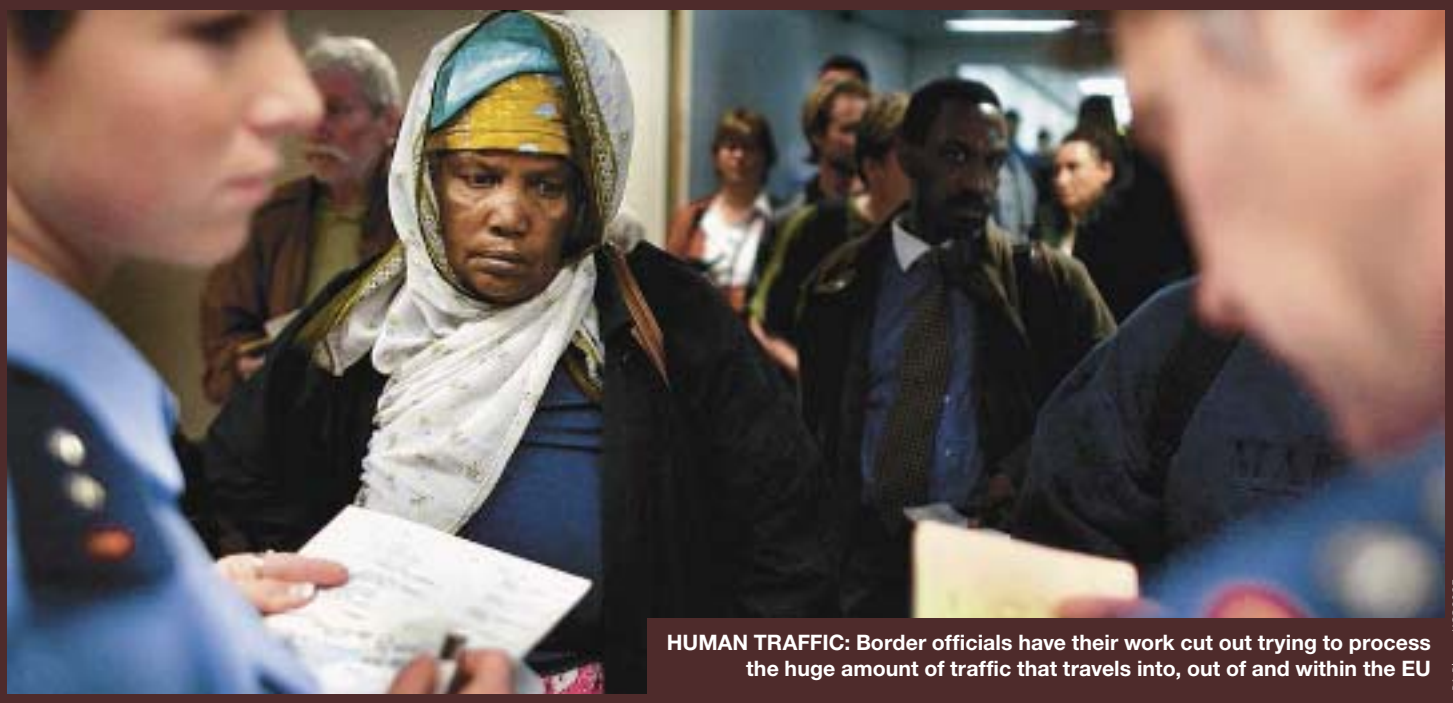
BIOMETRIC BARRIERS

Gary Mason talks to the man trying to improve the technology available to enforcement agencies to ease immigration problems within the European Union



ORGANISED CHAOS: Organised crime gangs are making more money smuggling people than drugs, according to European Commissioner Frank Paul, which makes the job of policing borders very difficult

PA Photos/1338026



HUMAN TRAFFIC: Border officials have their work cut out trying to process the huge amount of traffic that travels into, out of and within the EU

PA Photos/1338025

Looking out of his European Commission office in Brussels, Frank Paul can put a biometric finger on the cause of the immigration troubles in the free and largely borderless continent.

He knows at any one time there are 250,000 migrants, mostly from sub-Saharan Africa, waiting at ports in Libya to secure, by any means they can, a passage to Europe. Estimates of the number of illegal immigrants within the EU range from five to eight million, but the painful truth is that nobody really knows the figure.

Mr Paul also knows that, for example, 260 km away in Paris, police officers are regularly stopping people emerging from the Metro in an attempt to ascertain whether they have a valid visa to live and work in France.

'Out of 20 people who are stopped, I can guarantee you that eight of them will tell the police officer, "I am really sorry sir, of course I have a passport and a valid visa but unfortunately it was stolen yesterday",' says Mr Paul. 'The policeman is faced with a choice. He can take that person to the station to conduct a very detailed background check, which will take five hours and at the end of which he may well still have no idea if the suspect is legally in the country. The other option is to let him go. Which do you think happens in most cases?'

The other side of the story is a perfectly law abiding citizen who frequently travelled on business between Germany and Poland. He had the misfortune to share the same name and date of birth with a man wanted for a double homicide and his experiences of being continually stopped, questioned and searched by border police each time he travelled between the two countries became something of an embarassment for the authorities.

'This is because, if a border policeman stops someone with a common name such as John Smith, he may get a list of 10 other John Smiths on his screen. But until he interviews them he has no way of knowing which one is in front of him at the border post,' said Mr Paul.

Digital age

As head of the large-scale IT systems unit within the European Commission – a remit that gives him responsibility for the EURODAC fingerprint database for asylum seekers and the Schengen Information System (SIS), which is a pan-european criminal alerts database (see box) – Mr Paul knows that better technology at the borders and inland would help solve this problem.

He also knows that there are a host of vendors who would be more than willing to sell him expensive bits of kit they claim are 100 per cent reliable and interoperable. But tackling crime and border security is not that straightforward.

'Our police and border officials need cheaper, lighter mobile devices,' he says. 'There are a whole series of new products flooding the market but up until now I have personally not been convinced by any one device.'

Mr Paul says that reliability and price are still big issues in the biometrics market but there is no lack of willingness or ambition on the part of the European Commission to give people the tools they need to do their job.

'Borders are a big issue but we also want

'The UK has come across a case where a man attempted to sew someone else's fingertips onto the ends of his fingers'

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FINGER ON THE PULSE: Biometric fingerprint scanning could ease the burden on border police and customs officers who have to carry out a great deal of checks

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HANDS-OFF APPROACH: Technological advances at border control stations will reduce the need for officers to check passports manually

PA Photos/1338028

mobile devices to be rolled out to every police officer in the EU,' he says. 'In future, the police officer on the Paris Metro should be able to tell someone who says they have lost their documents to put their finger on the plate in their mobile equipment and within seconds he will know if the person has a valid visa.'

Cost is a big issue, he says, and part of the problem is that the industry looks at the total budget for border security in the US and thinks that the EU can match it on the other side of the Atlantic. 'People look at what Congress has authorised in terms of spending to secure the US borders and they think, "we are never going to be able to afford that". From industry, we need more help to come to a more realistic picture of how much this is going to cost.'

Pointing the way

EURODAC is an automatic fingerprint identification system based on information collected by consulates from those who seek asylum in EU states. In the four years it has been operating, Mr Paul says the system has only produced one wrong identification, which was discovered in the UK when the positive 'hit' on the system was manually verified.

But even a 99.9 per cent reliability rate can have serious consequences, he adds: 'If one out of a 1,000 people is wrongly identified as a criminal or illegal immigrant just think of the very negative consequences for both the person and the adminstration.'

Fingerprint spoofing – whereby illegal immigrants and criminals attempt to change or disguise their real fingerprints to defeat police and border checks – is also an emerging problem that is not being taken seriously by the technology industry, according to Mr Paul.

Some of the attempts to do this are extremely crude. For example, Duncan Hine, director of integrity and security at the UK's Identity and Passport Service, has come across a case where a man – very badly – attempted to sew someone else's fingertips onto the ends of his fingers.

Other fraudsters are using more sophisticated and less painful means to defeat biometric readers.

'Fingerprint spoofing is not yet a big deal but it will become a big deal very soon,' says Mr Paul. 'If you are in a consulate, for example, you will be behind a bullet-proof screen and when an asylum seeker comes to give their fingerprints you will not be able to see what they are doing with their hands.

'You can see on your screen if a set of fingerprints have been successfully enrolled or not, but you wont be able to tell if they are being spoofed.

'Also, if you are a border police officer in charge of 20 automated border passage gates you will be unable to check if everyone coming through those gates has not got fake prints glued onto the ends of their fingers.'

Liveness detection built into readers – which assesses whether the fingertip is real or not – would help defeat spoofing scams, but only one vendor has offered a limited liveness detection function in their biometric technology so far, according to Mr Paul.

'I believe that most public administrations will insist on liveness detection within a few years and not enough has been done in this field by the industry yet,' he says. 'Some of the companies think this is unimportant and not required by the market, but they are wrong.'

Countries are adopting different types of biometrics into their border security systems and this, too, is causing interoperability problems and creating an increasing need for multi-modal readers. The European Commission's technical unit – which Mr Paul heads – has said the preferred biometric should be fingerprints but at least one country, Holland, has invested heavily in iris recognition technology.

'Much more research is needed on multi-modal biometrics,' says Mr Paul. 'The Dutch registered traveller system, which has already been implemented, is iris based.

'Nobody is going to tell the Dutch government that their system is very nice but they have to throw it away and start again with a system based on fingerprints. This is why you need to have multi-modal biometrics, to use different biometrics in different places and circumstances.'

Interoperability is also being hampered by a lack of standards in biometrics border security applications, says Mr Paul: 'People in the industry think they have done a great job and all these standards are in place. No they are not. There is an ISO standard but it doesn't work in most cases.'

Most urgent is a standards template for sending biometric information – such as

the minutiae in a fingerprint image – over a network, he adds. There is an ISO standard for fingerprint templates in development but vendors accept that it is not 'mature yet' despite the best efforts of the European Commission to make it work.

'We have tried very hard on this,' says Mr Paul. 'I think we will either have to enforce it through legislation or get the industry to co-operate by some other means. So far there has been a mentality of companies developing proprietary solutions so that customers are bound in and can't change systems easily.'

In criminal hands

Biometrics is not the only technology being developed to enhance border security. One of the European Commission's major technical projects is the development of a sophisticated maritime surveillance system that will allow countries to monitor attempts by migrants to get into Europe from Mediterranean or Atlantic shipping routes.

'This system should allow us not only to detect those movements as soon as possible, but also to gather more intelligence about where these people are gathering before they leave on their journey and when they are going to embark,' says Mr Paul.

By having this information he says the authorities would be able to intervene much earlier and stop the rising number of immigrants who are drowned attempting to make dangerous crossings in the hands of organised gangs of criminals, who are interested in their money and not their personal safety.

'It is very difficult to legally emigrate to Europe, therefore organised crime fills that gap. Very few people realise that organised crime makes a higher revenue from smuggling people than they do from smuggling drugs. An additional problem is the penalties that are imposed by the authorities, which means that the risks from people smuggling are much lower.

'If you are caught smuggling a kilogram of heroin, in some countries you might end up with a 20-year prison sentence. But if you are caught trying to smuggle three or four illegal immigrants you can be looking at a sentence of only six months.' ■

MAINTAINING CONTINUITY: Standardising the systems in place at border controls within the different EU countries is another challenge for the European Commission

PA Photos/1338022

HOW THE SCHENGEN INFORMATION SYSTEM WORKS

The Schengen Information System (SIS) is a shared database that uses a computerised system to place alerts about wanted suspects or stolen property at the disposal of the authorities of each EU member state that is a signatory to the Schengen Convention. Information on more than 10 million individuals is registered on the system.

It has been in operation since 26 March 1995, when the convention applying the Schengen Agreement came into force.

Each Schengen State decides which of its law enforcement and immigration control authorities have access to SIS alerts and for what purposes. If a national authority finds that a particular individual or object is listed on the SIS, this is known as a hit.

The Schengen Convention was first fully put into force for an initial group of seven member states. It was later extended and, by March 2001, applied fully to all of the first 15 EU member states, except the UK and Ireland. The convention also applied, by that date, to the associated states of Norway and Iceland.

The main purpose of a new version of the system – SIS II – was to accommodate the inclusion of the EU's new member states. The creation of a new system was also seen as an opportunity to provide for additional technical features, in particular for the inclusion of biometric data (such as photographs, fingerprints, DNA profiles or retina scans).

Neither the UK nor Ireland has sought to opt in to the measures concerning SIS II immigration data, but they will both be covered by measures concerning policing and criminal law data, and data on stolen vehicles.

The initial intention was to implement SIS II in 2007, in parallel with the extension of the Schengen area to the EU's new member states. But, following the European Commission's award of the tender for the project, a disappointed tendering company brought legal proceedings against the Commission.

The Court of First Instance suspended the award of the tender until its interim ruling, in which it strongly criticised the Commission's conduct in issuing the tender, but nevertheless allowed it to proceed. The case was subsequently settled.

SIS II is now expected to come online in 2009.

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Staffordshire Police carry out wrist assessments - Hand Worn metal detector trial

Inspector Jav Oomer, NPU Commander, Burton recently trialed two models of hand worn detectors, supplied by Showcomms a member of APPSS and more commonly associated with headsets and accessories for Motorola, Nokia and Sepura Tetra radios.

The devices - the Adams Mitt (previously featured in Police Review), and a handworn metal detector called the **Frisker Pro.** Both were sensitive enough to detect small items such as wraps of tin foil.

Inspector Jav Oomer was granted permission for the trial after reading about the devices in a policing profession magazine. He said: "Knife crime in Staffordshire is very low compared to the national average, and it's our intention to keep it that way. To do so, we need to stay ahead of the game."

Targeted use of the devices would help police do this by allowing them to carry out stop and search operations more efficiently, he said. More practical than hand-held 'wand' detectors, they not only reassured officers by allowing them to work with their hands free, but let them uncover evidence of other illegal activity by, for example, tracing drug syringes.

Apart from stop-and-search operations, officers were to use the metal detectors while executing warrants and during Burton Albion's home game against Kidderminster Harriers on the August Bank Holiday Monday.

Following the assessment the Burton Police preferred the FriskerPro because it appeared as less intimidating and could be worn and operated whilst worn on the officer's wrist.

Since the trial www.Showcomms.co.uk have completed 3 orders totalling 25 units to Police Stations in Burton, Lichfield and Tamworth and also to a company providing door security staff in Ipswich.

The FriskerPro costs £141.00 including VAT.

To arrange a trial of the FriskerPro or Adams Mitt please call Bruce Cocks on 01689 876 620, www.showcomms.co.uk

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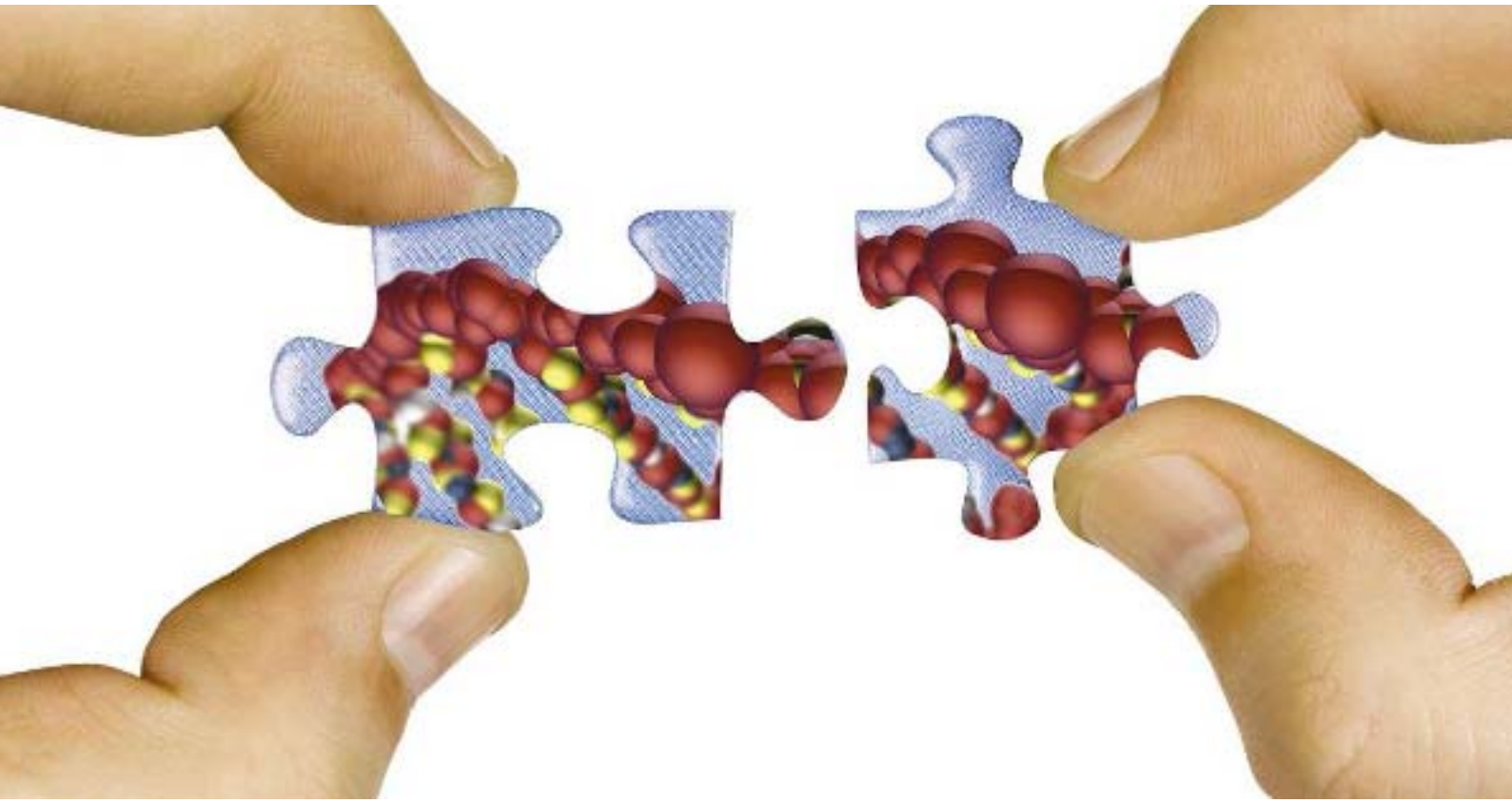

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Vetting better

The UK's Cleveland Police has revealed a 40 per cent improvement in the processing of its Criminal Records Bureau disclosure checks thanks to new technology. **Gary Mason** reports

The disclosure of criminal records to vet people who are working with the vulnerable is a huge data management task for all UK police forces. Even a relatively small force like Cleveland Police needed to complete more than 36,000 Criminal Records Bureau (CRB) checks last year.

The CRB is a Home Office agency used to check teachers, school caretakers, healthcare workers and applicants for certain other jobs. In the case of 'enhanced' CRB checks it searches for any Police National Computer record before sending each case to the relevant police forces to check for any pertinent local information that needs to be disclosed.

The local checks assigned to each police force are required because the applicant will potentially be working in an environment with substantial access to children or other vulnerable groups. This process is underpinned by a CRB service level agreement (SLA) to complete the checks on 75 per cent of the applications within 10 days and 100 per cent within 60 days.

As Cleveland Police's information compliance unit manager and the CRB force delivery manager, Norma Stott is familiar with the processes of the Criminal Records Bureau and the changes it has introduced to the vetting process.

'It brought in different levels of certification, which are standard and enhanced,' she says. 'Forces are required to make additional checks in relation to the enhanced applications. It is these checks that are required to identify any risk posed to those vulnerable groups.'

The bureau has made additional changes since its inception in 2002 (see overview) and introduced a quality assurance framework consisting of flow charts and guidelines. This helps to identify the relevance of information required to the position applied for.

Ms Stott explains: 'One of the difficulties experienced in the early days was of constantly double-keying, as well as having to log on and off different systems.'

'The system eases and speeds the process considerably for my staff. It is therefore very welcome'

Positive effect

Cleveland Police's information databases mirror those of other forces. However, these are now legacy systems, used purely as electronic libraries to store historic information. For Cleveland Police's nine-strong disclosure team, the difficulties

Getty Images/1350087

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experienced with the old system have been greatly reduced.

The system driving the force's new working environment is I/Disclosure 2 – a new piece of information management technology developed specifically for the purpose by Intergraph, a public safety systems specialist, and its partner Helmdart.

'The acquisition and implementation of the system has had a very positive effect on the staff,' says Ms Stott. 'The repetitive checking processes are considerable, but very necessary to protect these vulnerable groups. Having the I/Disclosure 2 system now eases and speeds the process considerably for my staff and increases the efficiency of the department. It is therefore very welcome.'

Cleveland Police has identified improvements as a result of the introduction of the I/Disclosure 2 system in the new vetting environment. So-called 'general' applications – the simplest form of check, but also the most common – are now automated and can be completed directly (no keying in) with one key click to access the information from the force's unified database.

Other checks in more complex cases are also now automated in the same way and the team at Cleveland can move with much greater ease between the data sources they access to complete each check.

Meeting targets

Importantly, given its investment, the improvements in Cleveland Police's CRB service have been measurable against service level agreement targets. Based on 'days to clear' (measurement of its processing ability, ie completing all checks and returning a case to the CRB), the force estimates that it has achieved a 40 per cent improvement, as well as improving quality by eliminating any re-keying errors that arise.

Cleveland has also calculated improvements by breaking down the steps in its vetting process and measuring time-to-complete for each. The result? Savings of 3,453 minutes or 57.55 hours per month.

'Other forces have been very interested and the disclosure team at Cleveland has conveyed the advantages and benefits to them,' Ms Stott says. 'A number of them have been to view the new Cleveland working environment. Another force will soon be installing the same Intergraph system.' ■

THE CRIMINAL RECORDS BUREAU: AN OVERVIEW

The Criminal Records Bureau (CRB) was established under Part 5 of the Police Act 1997 and launched in March 2002.

The bureau is an executive agency of the Home Office set up to help organisations make safer recruitment decisions.

Its aim is to help organisations in the public, private and voluntary sectors by using its disclosure service to identify candidates who may be unsuitable to work with children or other vulnerable members of society.

It does this by checking applicant details against records on the Police National Computer and other data sources, including locally held police infomation.

Prior to 2002, access to police checks was mainly confined to organisations in the statutory sector for staff who had 'substantial unsupervised access' to children.

There were many other organisations that could not access these checks and yet had staff with similar access to vulnerable groups. Today, the CRB Disclosure Service provides wider access to criminal record information for public safety purposes.

DISCLOSURE TECHNOLOGY

New technology has been developed to help police forces handle the Criminal Records Bureau (CRB) disclosure requirements, working within the agency's quality assurance framework.

What does the technology do?

Systems like that at Cleveland interface with the CRB's own web-based information management environment – automating the local and Police National Computer (PNC) searches that a force needs to undertake to support the CRB.

The system maintains a local database of disclosure applications dealt with by the force. A full audit trail of the activities carried out on each record is maintained.

What is the day-to-day impact?

Systems of this kind should improve efficiency and speed, resulting in manpower savings. Errors caused by re-keying are eliminated – when creating a record from a CRB web page or for local and PNC searches, there is no longer any need to re-key information.

Importantly, the new environment tackles the problem of CRB 'conflict' records by detecting that a record has already been created on the local police system. Disputed records are automatically linked to a resubmitted application.

The system's comprehensive audit trail of actions on each disclosure record includes the details of both the PNC and local system searches with no need to re-key or manually copy the information.

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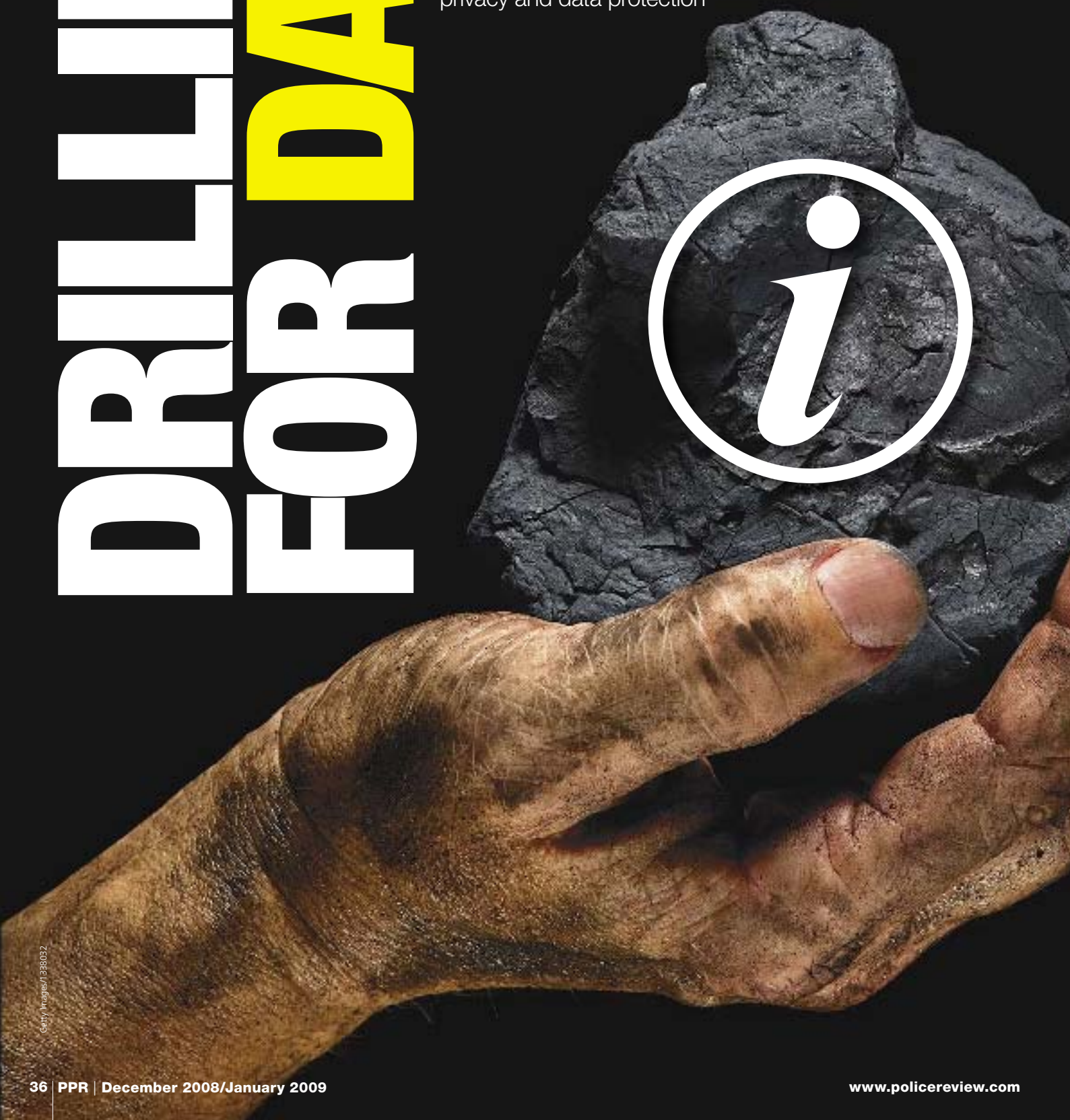
DRILLING FOR DATA

Gary Mason explores the use of data mining techniques in the fight against terrorism in the US and the fine line that separates national security from people's rights to privacy and data protection



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Keeping terrorist suspects under surveillance is a core task of law enforcement and intelligence agencies on a national and international scale.

Traditional policing methods for dealing with target criminals are clearly still important for doing this. Acting on intelligence, officers or agents are able to target a terrorist suspect, put him and his associates under surveillance – covertly and overtly – and gather evidence that will support a criminal prosecution.

One difficulty with this approach is that many terrorist suspects travel widely and are extremely surveillance conscious. For example, one of the suspects pursued by police officers in the US and the UK in connection with the 11 September 2001 attacks on New York and Washington would only meet associates in crowded public places. This made the use of covert listening devices extremely difficult.

The suspect was also extremely careful in his use of mobile phones – using multiple handsets and disabling and discarding them after making a small number of calls.

Another problem with mounting surveillance operations against terrorist suspects is that, while some of them may behave like target criminals, many do not. For example Richard Reid – the so-called 'shoe bomber' – who attempted to blow up a transatlantic aeroplane with an explosive device hidden in his shoe in 2001, had a background of street crime in London with several convictions for robbery. Yet Sajid Badat, who has been linked to Reid and was convicted of plotting to blow-up a US-bound aircraft using similar tactics to Reid's in 2005, was a multi-lingual academic with no previous criminal history.

The fact that terrorist suspects may well be embedded and respectable members of local communities makes surveillance of their activities using traditional law enforcement techniques extremely difficult, if not impossible. Yet it is also possible that active terrorist groups within those communities will also be involved in criminal activity. For example, in 2003 a North Carolina-based Hezbollah cell smuggled non-duty cigarettes into North Carolina and Michigan and used the black market profits to fund their terrorist activities. Despite their involvement in racketeering, their details were not held on conventional police databases because they did not have the profile of local target criminals.

Ethical dilemma

Faced with this problem, the US Department of Homeland Security has increasingly relied on the technology of data mining and behavioural analysis to help law enforcement agencies identify and put under surveillance members of the public who may be involved in terrorist activity. This is an extremely controversial area, not least because of its potential application as a random tool for putting large sections of the population under criminal surveillance.

Yet supporters of the use of this technology argue that data mining is already used widely in the commercial world – to detect fraudulent activity in the banking and credit card spheres, for example.

There is also a vast amount of linked data on individuals held in the commercial sector, particularly by the travel, banking and communications industries. If you regularly book a flight online your personal and financial details are often recalled automatically from a previous transaction – the largest databases in the world are simply click-streams created from online interactions.

More and more of this information is now being used by the authorities for surveillance purposes. Since the 11 September 2001 attacks, for example, the Federal Bureau of Investigation (FBI) have had the power to issue a National Security Letter (NSL), which mandates any third party to hand over information on an individual in the interests of national security.

NSLs need no judicial approval and their application, in many cases, is prevented from being disclosed to the public.

Some of the information being requested is freely available to the authorities anyway – air passenger records held by the National Aeronautics and Space Administration (NASA) and data from private data brokers (commercial organisations who sell their data for business purposes) are just two examples. Meanwhile, some US government departments have mandated access to specific types of data. The Department of the Treasury, for example, obtains suspicious activities reports from banks and other financial institutions in order to investigate money laundering.

But it is the random scanning of everyday data by law enforcement authorities – such as ordinary telephone and internet message traffic – that is the most controversial area of data mining.

Official warning

This has been the subject of a recent detailed report by the US National Research Council (NRC). At the request of the Department of Homeland Security and the National Science Foundation, the report examines the technical effectiveness and implications for civil liberties of data mining and behavioural surveillance techniques.

Its findings, published last month, back the use of data mining to conduct surveillance against identified terrorist suspects or in areas that are known to be connected with terrorist activity, such as credit card fraud. But the report questions the ethics and surveillance value of automated data mining techniques that search databases for unusual patterns of activity not already known to be associated with terrorists.

'Decisions to use programs need to be based on criteria more stringent than "it is better than doing nothing"'

The report states: 'Although these methods have been useful in the private sector for spotting consumer fraud, they are less helpful for counterterrorism because so little is known about what patterns indicate terrorist activity.'

It warns that widespread use of automated data mining is likely to generate huge numbers of false leads and that 'arrest, search or denial of rights should never be taken solely on the basis of an automated data mining result'.

Selective searching

Routine forms of data mining can provide important assistance in the fight against terrorism by expanding and speeding up traditional investigative work, the report says. For example, investigators can quickly search multiple databases to learn who has transferred money to or communicated with a suspect.

More generally, if analysts have a historical basis for believing a certain pattern of activity is linked to terrorism, then mining for similar patterns may generate useful leads. The

strength of this type of data mining surveillance – which is known as subject-based data mining – is that trained analysts are 'pre-selective' in deciding which bits of information or databases they want to target.

So they may decide to conduct an automatic licence plate recognition sweep of every car captured on CCTV within a specified radius of a terrorist incident or screen all subjects who have bought chemicals that could be used to manufacture explosives.

'When several disparate pieces of information of this type are obtained that are associated with terrorist activity, identifying a subject of a database that matches one or more of these pieces of information is known as "drilling down",' the National Research Council report says. 'This is a data mining technique that simply expands and automates what a police detective or intelligence analyst would carry out with sufficient time.'

The technology that drives this type of data mining is known as machine learning and pattern recognition. Machine learning is the study of computer algorithms that improve their accuracy automatically through experience.

The report claims this technique reduces the problem of poor quality data, saying: 'For example, in scanning carry-on luggage to decide which contents are of concern and which are not, the process of simultaneously and individually searching a large number of the bags identified both those of concern and those not of concern and feeding back this information into the decision algorithm can be used to improve the algorithm.

'Over time the algorithm can learn which patterns are associated with bags of concern.'

The terrorist threat to the US is all too real, the committee says, and the use of less-discriminatory data mining techniques to combat the threat is widespread.

'The most serious threat comes from terrorist groups that are international in scope: these groups use the internet to recruit, train and plan operations, and use public channels to communicate,' the report says. 'Intercepting and analysing these information streams might provide important clues about the nature of the threat they pose.

'Key clues might also be found in commercial and government databases that record a wide range of information about individuals, organisations, and their behaviour.'

But successfully identifying signs of terrorist activity within this mass of data is extremely difficult, the committee says. Each time a person makes a telephone call, uses a credit card, pays taxes or takes a trip he or she leaves digital tracks – records that often end up in massive corporate or government databases.

Privacy protection

Through formal or informal agreements, the government has access to much of the data owned by private sector companies. But even well-managed programs result in some 'false positives' where innocent people are flagged as possible threats and their personal information is examined. The report says that the US Congress should re-examine existing law to assess how privacy can be protected in such programs and should consider restricting how personal data is used. It recommends that any individuals harmed by violations of privacy be given a meaningful form of redress.

Although some laws limit what types of data the government may collect, there are few legal limits on how agencies can use already-collected data, including that gathered by private companies. An agency could obtain and mine a database of financial records for counterterrorism purposes, for example, and then decide to use it for an entirely different purpose, such as uncovering tax evaders.

Restrictions on use can help ensure that programs stay focused on the particular problems they were designed to address and guard against unauthorised or unconsidered expansion of government surveillance power.

All information-based programs should be accompanied by robust, independent oversight to ensure privacy safeguards are not bypassed in daily operations, the report says. Systems should log who accesses data, leaving a trail that can itself be mined to monitor for abuse.

Poor quality data is a major concern in protecting privacy because inaccuracies may cause data mining algorithms to identify innocent people as threats, the report says.

Linking data sources together tends to compound the problem. Current research suggests that a 'mosaic' of data assembled from multiple databases is likely to be error-prone. Analysts and officials should be aware of this tendency toward errors and the consequent likelihood of false positives.

Such techniques might, however, have some value as secondary components of a counter-terrorism system to assist human analysts.

'The danger of terrorist attacks on the US is real and serious, and we should use the information technologies at our disposal to combat this threat,' says William Perry, co-chair of the committee that wrote the report and former US secretary of defence. 'However, the threat does not justify government activities that violate the law or fundamental changes in the level of privacy protection to which Americans are entitled.'

The committee also examined behavioural surveillance techniques that try to identify terrorists by observing behaviour or measuring physiological states. There is no scientific consensus on whether these techniques are ready for use at all in counterterrorism, the report says. At most they should be used for preliminary screening, to identify those who merit follow-up investigation.

Furthermore, they have enormous potential for privacy violations because they will inevitably force targeted individuals to explain and justify their mental and emotional states. ■

NATIONAL RESEARCH COUNCIL SAFEGUARDS

The NRC report into data mining offers two sets of criteria and questions to help agencies and policy-makers evaluate databased counterterrorism programs.

One set is designed to determine whether a program is likely to be effective. For example, a system should be tested with a data set of adequate size to see if it will work when used on a large scale and should be resistant to countermeasures.

A second set of criteria assesses the likely impact on personal privacy and helps to ensure that, if implemented, the program protects privacy as much as possible. For instance, each program should operate with the minimum amount of personal data consistent with its objective and should have a process in place for the reporting and redress of intrusion into people's privacy due to false positives.

'We hope this framework will help agencies and policymakers determine whether new programs are likely to be effective and consistent with our nation's laws and values and continually improve programs in operation,' said Charles Vest, committee co-chair and president of the National Academy of Engineering. 'Decisions to use or continue programs need to be based on criteria more stringent than "it's better than doing nothing".'

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AQUA ARTILLERY: Modern water cannon can travel at speeds of 70 mph, carry nine tonnes of water and have bomb-proof, insulated and air-conditioned cabs

WATER TREATMENT

Gary Mason looks at the development of the water cannon by police forces in Germany and Belgium, where it is a popular less-lethal option for use in riot control and public order incidents

The use of water cannon to disperse crowds in public order incidents is part and parcel of the training and tactics used by the German Federal Police.

While not every western European country agrees that the vehicle-mounted cannon are the most effective way of dealing with such incidents, Germany and Belgium have been at the forefront of developing the vehicles and the water-firing jets into a more effective riot control resource.

The problem with the first such vehicles developed during the early 1980s was that the jets mounted on them lacked sufficient power to be effective. Viewing these vehicles in Germany for the first time as a possible option for riot control in the UK, one senior British police officer famously said that they were only good for 'getting people wet'.

In 1983, a prototype vehicle developed in Germany had higher jet power and was capable of preventing the approach of rioters closer than about 30 m. It had larger water capacity and a higher pump rate.

At the time, this model was the only one thought capable of driving rioters back and distancing them from the police, and became the prototype for vehicle-mounted cannon used by police in Germany and elsewhere today.

For example, in June 2007 the German Federal Police used water cannon against protesters who broke into the no-demo area around the G8 summit near the town of Bad Doberan. According to police spokesman, Lüdger Behrens, officers used water cannons twice after demonstrators bombarded them with stones.

Both the German and Belgium police use the Belgian-made Mol CY NV MSB 18, the Somati RCV 9000 or the German-made Ziegler water cannon vehicles for such incidents. The new Ziegler Wawe 9 water cannon replaced the

MOL MSB18 6x6 vehicles previously used by the Belgian Federal Police.

Typically, these vehicles hold a crew of four: the driver, a commander and two cannoneers. The RCV 9000 can hold nine tonnes of water and disperse it all within four minutes if set on maximum pressure. The cannon engine was designed for rapid deployment and can travel at 70 mph fully laden with water.

According to Somati, the cabin is virtually impenetrable, with no foothold for rioters to climb onto the cannon and no spaces where bombs could be inserted. The cabin is bomb-proof, insulated and air conditioned. If the wheels are shot at, the cannon can be driven for 25 miles at 50mph with flat tyres.

NON-LETHAL WEAPON: The cannon used in Germany and Belgium are built to withstand all manner of attacks but are considered a non-lethal form of riot control

Luc De Jaeger/1338043

SPRAY AWAY: Vehicle-mounted water cannon can keep rioters at a distance of around 30 m

Luc De Jaeger/1338044

Water safety

Although some protestors have claimed to have suffered physical injuries as a result of water cannon being used against them, the Belgian and German police authorities – and the Police Service of Northern Ireland (PSNI), which also uses the cannon – have made no reports of serious or life-threatening injuries to the public that could be attributed to the jet of the Belgian Mol CY NV MSB 18 or the German Ziegler water cannon.

Vehicle-mounted water cannons are not as accurate as alternative less-lethal options that are designed to strike specified individuals, such as baton rounds or Tasers. However, they can be used in a variety of modes that reduce the energy transferred to the body by the water jets. These include spray or diffused output, and short bursts.

To assess their safety in a public order situation, the cannon have been tested against dummies to see what effect they would have by either striking the body directly or knocking debris such as rocks or sticks into a protestor. In the tests, the application of the water jets to the ground resulted in the acceleration of small pieces of debris to a height that produced he risk of non-penetrating impact to anyone standing in its path. The principal risk was impact to a person's eye.

Pressure points

Typically, water cannon vehicles can hold up to around 10,000 litres of water. It is also possible to adjust the flow rate and pressure of water fired from the jets, which can be dispersed at anything up to 4,000 litres per minute.

The firing system can also be altered and different modes used that allow for preservation of water. Police cannoneers can fire a short pulse of water at targeted demonstrators, which is usually a single burst of between five and 15 litres of directed water. For more widespread dispersal of crowds, the cannons can also be set on an automatic pulse that fires between 40 and 70 pulses per minute or a continuous stream of water that fires 900 litres per minute.

Most vehicles have an additional tank to hold either a dye or irritant additive, which can be mixed with the water system. A maximum reach of around 90 m is achievable, however this is dependent upon the nozzle and pressures used. Most units reach a maximum range of around 65 m.

Accuracy requires practice as operators often have a limited view and have to rely on directions from the driver. However, a number of vehicles now incorporate cameras to make aiming easier.

A problem with the earlier prototypes of police-operated water cannons was that they quickly ran out of water. Most modern vehicles can be refilled from water hydrants used by fire services or from reservoirs, lakes or rivers.

The force of the water is claimed to restrain an average-sized human at 40 m. There is also the option of delivering an incapacitant with the jet of water at a concentration previously set during installation.

As well as the fixed-mounted units, portable ground monitors are available. These devices are relatively small and may be easily stored and transported. They are designed to be maintenance and corrosion free, using high-grade marine stainless steel with flap valves made from gunmetal bronze.

The water used can be drawn from natural sources – such as rivers – or from a storage tank and the devices are powered using either diesel or electric pumps.

The maximum range of water dispersed from these portable devices is around 53 m. ■

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CAPTURING THE CRIMINALS

Merseyside Police's facial recognition technology could see it play a key role in a project to introduce national standards of image capture, as **Gary Mason** reports

Earlier this year, the FIND project to introduce national standards for police image capture was wound up by the National Policing Improvement Agency (NPIA) due to funding issues.

However, this work has now been re-launched by the NPIA as the Police Image Capture Standard (PICS).

The announcement comes at a time when Merseyside Police continues to develop new ways of using facial recognition technology to help create minimum standards of image capture and identify suspects more rapidly.

The news that the FIND project has been re-launched as PICS could place the force in an important position to share its best practice in this area with other forces.

Taking the lead

Merseyside was the first force in the country to trial a Digital Image Booth (DIB) to allow it to take better quality images of suspects that pass through custody using facial recognition technology.

At present, the majority of forces use either digital or manual cameras to capture their images or mugshots – leading to a variation in the quality of images.

These booths are now standard practice in all Merseyside Police custody centres and the force is compiling all the images it generates onto a locally held database.

Other forces such as City of London and Hertfordshire now use the booths in their custody suites.

Merseyside Police has now taken this work a step further and become the first UK force to trial new technology that will help it verify the identity of arrested suspects even before they reach the custody desk.

The Digital Image Register (DIR) takes images of a suspect when they are kept in the airlock or holding cell outside custody and searches the images against a locally held data base.

This alerts the custody sergeant from the outset as to whether the person is already known to police and may be wanted on bail or warrant.

It also allows him or her to decide which prisoners to process first, based on their past criminality. Once the custody sergeant

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‘The fact that suspects can now be identified even before they reach the custody desk is a truly innovative idea’

confirms the person they want, rather than having to key all the necessary data into the Niche custody record system, they press a button and the custody record is automatically filled out with all existing data on that person.

The register has been trialled at the force’s busy St Anne’s Custody Suite where it has identified on average 40 per cent of suspects who pass through custody.

The force embarked on the trial because it was looking for ways to speed up the time it takes to process prisoners in custody and allow officers to spend more time on the streets. It predicts that the technology has the potential to save it in excess of 2,000 hours in officer time each year.

Facial recognition experts OmniPerception developed the software used in the Digital Image Register to take the pictures.

The company’s AFIT.QA and Colossus software not only takes good quality images, but is also capable of searching the images against the database in a matter of seconds – allowing for rapid identification of suspects.

The register unit itself is supplied by DW Group, which has been working with the force to ensure the unit is rigorous enough to withstand the custody environment, that the lighting is of sufficient standard to take good quality images and that it is easy for officers to use.

Both companies have previously worked with the force on the Digital Image Booth project.

Valuable intelligence

Simon Byrne, assistant chief constable (area operations) of Merseyside Police, says the trial had been a success and that the force was aiming to roll-out the DIR across their eight custody centres from January.

‘The fact that suspects can now be identified even before they reach the custody desk is a truly innovative idea that has never been done before by a police force,’ he says.

‘This not only speeds up the custody process and enables officers to spend more time on the streets, it also provides officers with valuable intelligence on an individual offender. This could include safety issues such as violence and also communicable diseases.’

Merseyside Police currently has a quarter of a million images on its database and hopes that it will continue to grow once the technology is rolled out across the force.

David McIntosh, the chief executive officer (CEO) of OmniPerception, says that Merseyside Police is one of a number of forces that are now beginning to see the benefits that facial recognition technology can realise.

‘Facial recognition technology can be of enormous benefit to forces because of the rapid and accurate way it can identify suspects and also detect if somebody is trying to use an alias,’ he says.

‘It has never been used by a police force in this way before and we predict that it is the first of many examples of innovative applications in the future.’

Lighting the way

Patrick Leigh, the CEO of DW Group, says the main challenge for the Digital Image Register project was dealing with the varying types of holding cells that all have different lighting in them. ‘Facial recognition is very reliant on the environment and we needed to make sure that every holding cell has the same lighting, which is a challenge because this is not always possible,’ he said.

As a result, DW Group has now redesigned the register in conjunction with Merseyside Police to produce DIR 2 – which has a light canopy to address this issue.

It has also moved the touchscreen PC to the side of the unit. This is because during the early trials the force found offenders were looking at the officer who was working the touchscreen rather than at the Digital Image Register, which sometimes resulted in a low-quality image.

Mr Byrne says his force already has plans to compare images from the database against crime scene pictures, such as CCTV images.

‘In order for us to get that far there has got to be some improvements in the database that’s behind all this,’ he said. ‘We are working to develop that and also the quality of the image capture.’ ■

THE DIGITAL IMAGE REGISTER

The Digital Image Register (DIR) is a wall-mounted unit produced by DW Group that contains OmniPeception’s AFIT.QA and Colossus facial recognition technology.

When a suspect reaches custody they are put into a holding cell or airlock where they have their image taken by standing in front of the register.

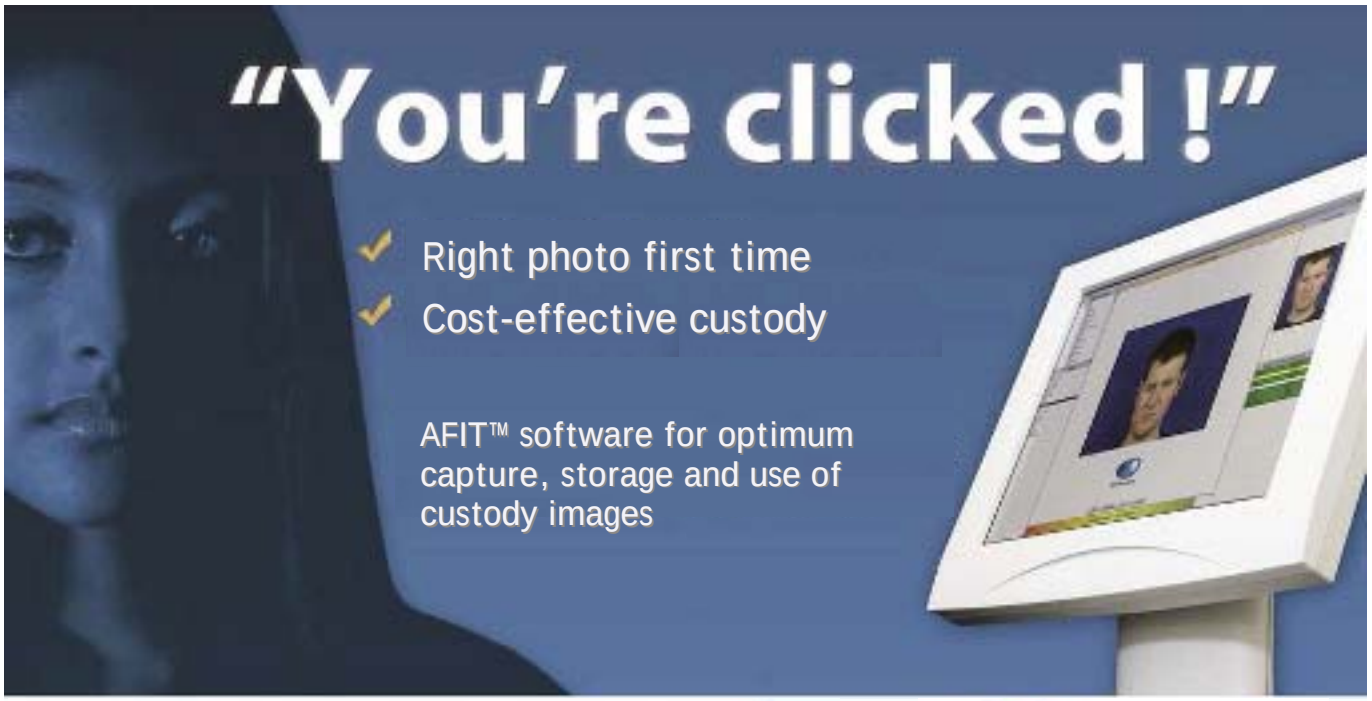
Using a touchscreen, the officer enters his shoulder number, takes the picture and presses the search button, which searches the image against a database in seconds.

If a match is recorded, relevant information is colour coded in order to comply with data protection requirements.

The colour codes are:

- **Green – the person is known to police but there are no markers against their name;**
- **Yellow – there is a bail marker against the person’s name;**
- **Amber – the person is wanted on warrant; and**
- **Red – the person is wanted and is considered a serious criminal.**

The DW Group is now developing the next generation Digital Image Register following feedback from the Merseyside trial.



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2008 Market developments

In the UK the National Policing Improvement Agency (NPIA) having taken over responsibility for police technology and equipment from the defunct PITO organisation has been forced by budget cuts to restructure some of its programmes. But on the positive side new framework agreements - specifically for the procurement of forensic services by police force - has given a long overdue overhaul to the tendering process. The drive for police forces to deploy mobile data technology has also received government funding and political backing.

Elsewhere in Europe, after long delays and negotiations Germany has started the roll out of its digital TETRA radio network for the emergency services. Meanwhile the EU is poised to invest heavily in border security systems including biometrics, IT and the use of unmanned air vehicles (UAVs)

In the US, there has been a drive to increase the surveillance capacity and the disaster management systems in major cities. New York's new public safety network that links all the city's public safety agencies, CCTV systems and other sensors is setting the benchmark for others to follow.

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Contributors/ Beitragende gesucht!

Wir sind sehr an Nachrichten, Aussichtspunkte und Eigenschaftsbeitraege von der Polizei, Regierung, Industrie und von Freiberuflern interesiert.
Willkommen waeren auch Beitraege von Furhrungskraeften aus diesen Bereichen.

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Fuer weitere Informationen kontaktieren Sie bitte Herrn **Ian Barrett** unter der Nummer **+44 (0) 20 8276 4709** oder Email Adresse **ian.barrett@janes.com**

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Contributors wanted!

We welcome news stories, viewpoint and feature contributions from police, government, industry and freelance journalists.

We would like to receive content on new police and state security products and services, procurement and technology applications an implementation.

We are also interested in thought leadership from senior figures from police, government and industry

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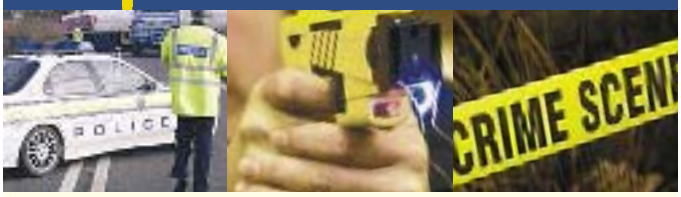

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UPWARDLY MOBILE

Andy Whyte explores the options available to UK forces developing mobile data projects to assist in the delivery of key recommendations from Sir Ronnie Flanagan's Review of Policing

At the time of writing, police forces across the UK will be waiting expectantly to see if their funding bids for mobile data projects have been successful. The Home Office funding has already kick-started these projects, with forces having to rapidly develop their mobile strategies in order to submit a suitable bid.

The fact that mobile data assists forces in the delivery of some of the key recommendations from HM Chief Inspector of Constabulary, Sir Ronnie Flanagan's Review of Policing is another reason for so much attention currently being placed on it.

The National Policing Improvement Agency (NPIA) has established the benefits of mobile data through pilot projects over the last two years. One of those projects, with Bedfordshire Police, consisted of a deployment of BlackBerry handheld devices to initially deliver mobile applications for briefings, crime tasking and Police National Computer (PNC) access.

With over 1,300 users now relying on their BlackBerry, the project demonstrates that mobile data can be rapidly deployed and very quickly becomes an integral part of an officer's daily routine. Not only that, frontline officers are requesting more and more functionality with additional applications being added to cover neighbourhood questionnaires, intelligence submissions, the Socrates system and many intranet-based solutions. Bedfordshire's multi-award winning project has successfully demonstrated the benefits of mobile data and the importance of choosing the right partners.

Security assurance

Security is often overlooked or seen as an obstacle to overcome during the development of a mobile application.

BlackBerry is the most secure mobile platform available, having worked with CESG – the UK Government's national technical authority for information assurance – to gain approval for use with restricted data.A set of policies ensures that the security risk is managed in line with CESG guidance and senior officers do not need to be concerned with damaging, or at the very least embarrassing, losses of sensitive data.

Microsoft's Windows Mobile solutions do not achieve the same level of security and several forces have extensively evaluated both platforms before making a decision to focus on BlackBerry. To assist forces in bidding for mobile data technology, the NPIA introduced procurement contracts, known as accelerator packages, designed to speed up the tendering process.

'With police forces operating different systems, a 'one size fits all' approach is not realistic'

These are important because the terms of the Home Office funding for new mobile data projects lay down quite short timescales for the implementation of the technology.

However, forces must realise that there are other options. Many solutions, including those provided to Bedfordshire Police, are available through different framework agreements. While not available as an accelerator package on the NPIA framework, Airpoint applications, for example, are available on the Catalist or West Yorkshire framework through Vodafone.

Typically, mobile solution providers are small companies or small parts of large organisations that are growing.

Often, the innovative companies are not big enough to get onto framework agreements in their own right. As a result, partnerships with framework suppliers are essential to bring the most innovative and flexible solutions to the police market in particular and the public sector in general.

But, in a mobile solutions environment, which partnerships are most appropriate?

The right partner

The link with the mobile network is obvious for many mobile solution vendors. However, Vodafone, for example, provide far more than simply a mobile network.

Through their Professional Services and Managed Services divisions, they can provide additional services that are key to delivering and supporting mobile data projects on the scale required by police forces. And it means that the most innovative applications and the flexibility provided by small companies are available to all forces.

Not only that, the contract is with a major framework supplier and the risk of contracting with a small company is managed through that process. In addition, Vodafone's teams can provide the implementation and support services necessary to deliver the project via a single point of contact.

This is very powerful argument for adopting a managed service approach to the delivery of mobile data projects.

The NPIA accelerator packages aim to provide off-the-shelf mobile solutions covering key applications and a degree of standardisation. But, with UK police forces operating such a vast array of different systems, a 'one size fits all' approach is not realistic.

Every force's mobile project will require either unique interfaces or a unique combination of interfaces.

The flexibility and speed of response offered by smaller, more agile mobile solution providers is essential in delivering the data needed by frontline officers, even if they are using a standard front end process. ■

Andy Whyte is managing director of mobile applications specialists Airpoint Limited

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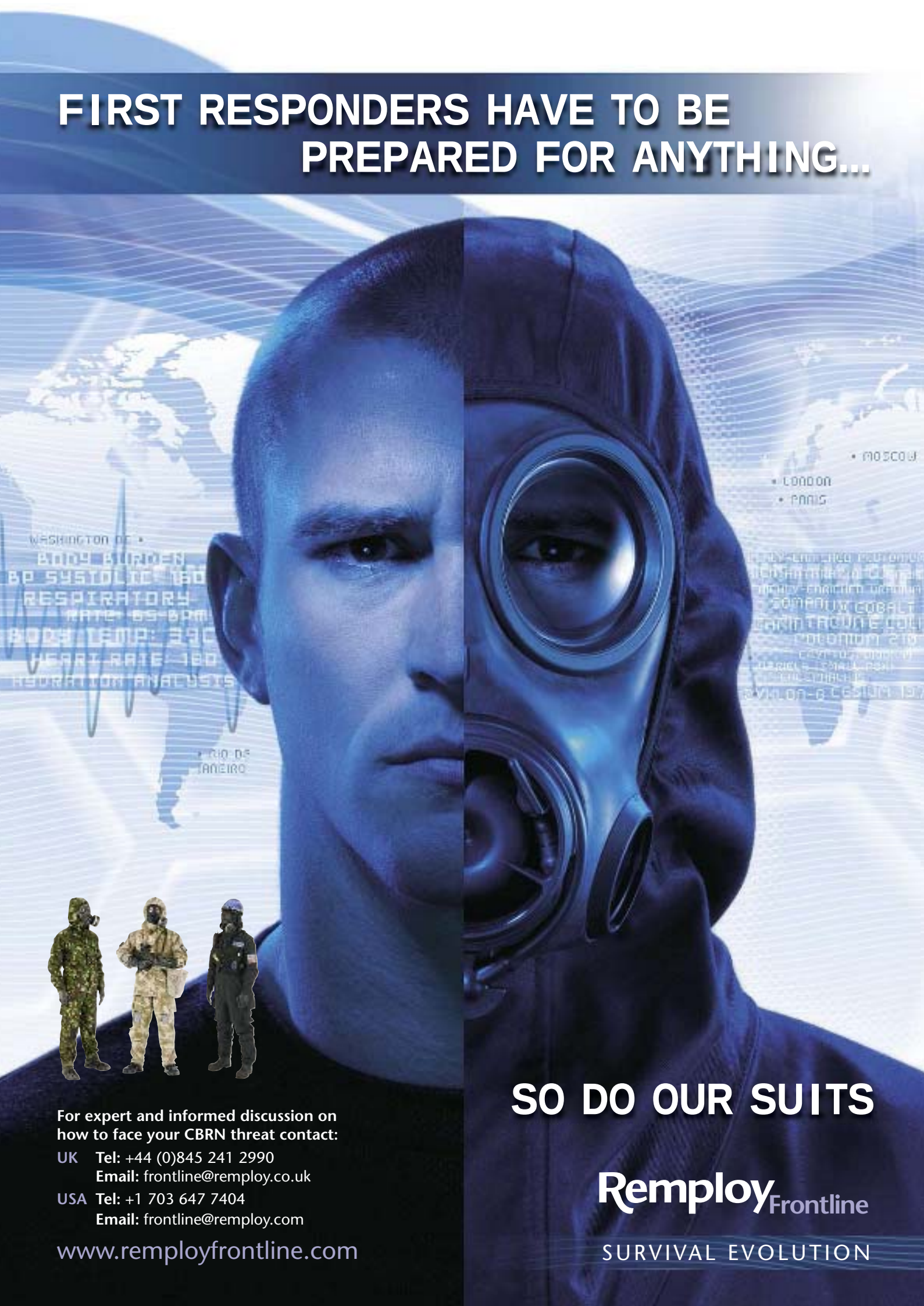

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