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**In action:
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over cellular**

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Push to park

Richard Lambley reports from Derbyshire on an innovative technology which delivers full PMR-style two-way radio communications with a national reach, using the public digital mobile phone network

In the scenic, hilly landscape of the Derbyshire Dales, PMR coverage is costly to provide because of the numerous radio sites which the terrain demands. So when APCOA Parking lodged its successful bid to manage the local authority's public car parks, the company knew it would need a cheaper means of keeping in contact with its officers on the ground.

"Geographically, it's a big area", comments Russell Peacock, APCOA Parking's contract manager for the district. "It's the whole of Derbyshire, it's about 100 miles across. We do right the way up from the High Peak in the North all the way down to South Derbyshire, Swadlincote. We deploy 23 staff amongst the area, and obviously a fundamental part of that is to make sure that we can stay in communication with them all."

For previous deployments, APCOA has relied on traditional VHF/UHF mobile radio systems. But for Derbyshire – and for a separate contract recently awarded in Staffordshire – it has chosen the YouPoC communications package from Push to Talk UK. This technology, which APCOA has been using here since February, provides two-way voice communications using data capacity on the public GSM mobile phone networks. These offer ubiquitous radio coverage even in Derbyshire. "The area here is so vast that this system was absolutely ideal, because we didn't need a mast and we didn't need the expensive cost of renting mast sites", Mr Peacock says. "With the Vodafone network, we've got 99 per cent coverage, so we have a lot better coverage than we would otherwise."

Rugged radios

For his staff, the YouPoC radio system is simple to use, thanks to their ruggedized Sonim GSM handsets. Just one afternoon of training was needed before the system went live. In addition to a full set of familiar mobile phone features, the

devices provide PMR-style functionality complete with the traditional push-to-talk button. "You press the button in the side, wait for it to beep, and you speak", Mr Peacock explains. "It's as simple as that." He adds: "I know that the system can do a lot more, but we don't want to worry about radio systems, so we've simplified it as best we can. You push a button on the side and you speak."

In operation, the system emulates basic PMR – and indeed it was even supplied by a PMR dealer, London Communications. Just as with conventional PMR radio, the push-to-talk button can be used to make group calls which are heard by other members of the team. Or the user can make person-to-person calls, to contact a colleague or the supervisor privately. There is also an emergency button which is configured to flash up an alert on the supervisor's dispatch screen back at the office.

Constant communication

With operations based at Matlock, Buxton and Chesterfield, APCOA Parking would probably have had to find mast sites for several repeaters as well as a central radio base station, had it opted for conventional PMR. But the public mobile phone network is already everywhere, waiting for phones to connect to it. Besides providing better overall radio coverage, together with crisp digital speech quality, the PoC (push-to-talk over cellular) service offers operational flexibility, making it possible to separate the three areas into separate talk-groups so that the parking officers are not disturbed by irrelevant calls from outside their area.

Most calls over the system are simply about keeping in touch. "It's a health and safety issue", says Mr Peacock. "We have to make sure that we have constant communication."

"What we can't do is to put a supervisor with every single individual, because it just doesn't work out for economy. So they are working on their own a lot. You are expected from very early on to be out there on your own."

"I was a parking attendant back in the early 90s, and I know what it's like. It can be quite daunting when you are out there on your own."

Top: civil enforcement officer Laura Keen patrols a car park in Matlock, one of the sites managed by APCOA Parking. In her hand is her PoC radio. In an area popular with tourists, these car parks can become extremely busy at holiday times. The officers are rotated daily between sites so that an erring motorist is unlikely to be ticketed by the same one twice running.

Right: Russell Peacock, of APCOA, at his Matlock office



You are issuing penalty charge notices to people and you find they're not going to be very happy about it!"

Should staff find themselves in difficulty or danger, they can instantly contact the supervisor or even call the police. This, Mr Peacock adds, is a further advantage of the Sonim handset, because of its mobile phone capability. "We don't have to issue a radio and a mobile phone. They can call straight on that phone to the police if they need them. It reduces the downtime of radioing in here and maybe not being able to get through, and for us to try to assess what the situation is and maybe call the police. If they feel that they are in a threatening situation, they can call the police straight away."

Management information

On top of that, the radios are a management tool. "We are quite strictly controlled in what we can charge to our client", Mr Peacock continues. "We charge a 'deployed hour', which is basically a man or woman out on the street, patrolling an area. Any downtime – if they go to the toilet – they have to log off." On the supervisor's screen, a status icon indicates in real time the availability of each officer.

The radios also provide support and guidance for the staff – an important factor, he finds, in managing a newly-recruited team, most of whom brought no previous experience of this type of work. "We try to recruit people from customer services backgrounds like pubs, or like the buses or shops, who have had some dealings with individuals like that before."

"But you can't always get those individuals. They are new to the job, more than anything, and I think the radios have been very good for them. The phone part of it has been really use-

The drop-proof Sonim XP1, seen here with an antenna accessory providing extra sensitivity for fringe areas, is a Mil 810F-rated rugged handset built for outdoor workers and outdoor enthusiasts. "We have had some dreadful weather – some real heavy downpours – and we haven't had any issues with the radios at all", says Russell Peacock. Compliant with the OMA-PoC open standard for push-to-talk, the XP1 also provides a full set of GSM voice and data capabilities – Bluetooth too. On the screen is a live 'presence' display listing the availability of the supervisor and other members of the team – a central feature of the YouPoC service



ful because they haven't had to make known their – maybe – shortfalls in some of the things they understand to the rest of the team. What they can do is to make a private phone call from the radio to our office.

"If they haven't got that facility, it sometimes means that they will not make the call and they will probably end up making a mistake. So it's good for them, and that is a good benefit. Again, we can send text messages to them, or we can ring them directly and privately and ask them to be in a certain area without it being deployed over the whole group."

In contrast to ordinary GSM phone calls, the push-to-talk voice traffic is streamed as data packets through the phone's GPRS data capability. Since GPRS network capacity is relatively little used and the data throughput generated by this voice traffic is small, the network can be expected to support numerous PTT users, even in country areas.

APCOA's staff can also use their handset's ordinary GSM phone call functions, to dial up anyone they need to speak to. To make this possible, APCOA is paying for GSM subscriptions on top of the monthly PoC charge. But since this adds significantly to the overall communications bill, Mr Peacock intends to reconsider it as the system beds in. He points out that APCOA Parking's other new system in Staffordshire (supplied independently by another PMR dealer, Sounds Good Radio) is currently PoC-only. Besides, a GSM phone can be used to make emergency calls even without a sim card or subscription.

"At the moment, they are calling one another for advice – which is great from my point of view because it takes the stress off our management here", he says. "That's what we want to encourage, really. My fear is that not having the GSM will take that facility away, somewhat. But also there is another concern, obviously, of the human nature side – whether they are just sitting there gossiping and not using it solely for



Working outside in all weathers, APCOA's officers require a radio which can withstand heavy rain and rough handling

"Callsign two-six, three-three, this is Control; radio check, over", calls supervisor Andrew Pollard, making a routine safety check from the dispatcher terminal. Like the phones, his screen indicates the status of team members in a real-time 'presence' display. But instead of being connected via a phone, the terminal is linked through the Internet to Push to Talk UK's PoC server in the London Docklands. This, in turn, is connected via a dedicated broadband pipe into the Vodafone network, ensuring a fast, congestion-free communications path. Using his drag-and-drop screen, the supervisor can send text messages or make voice calls to individuals or groups; to speak, he presses the spacebar





As well as their PoC phones, the Derbyshire officers carry a chunky computer for issuing tickets (right) and a digital camera for photographing offending vehicles



Tim Allerton, managing director of YouPoC Push to Talk: he brings to PoC a PMR and Tetra background acquired with Philips, Simoco and Motorola. "We are taking all the advantages of the cellular world and putting all the PMR features around it", he says. "That's our unique proposition"

Below, Sonim's new XP3 Enduro model, which has enhanced resistance to water ingress (IP57 in place of IP54), a bigger keyboard, better battery life, a built-in torch feature, and PC synchronization support. A future model will include a GPS receiver for personal tracking applications



work! We just have to monitor it, and because of the billing we can monitor it quite closely."

One other benefit he is expecting from the system will emerge during major public events, when enforcement officers have to be transferred from another area. "They can take their radios with them, log out of the group here, they can go to the other site, log

into the local group there and then they can bash on to their communications. So with the flexibility of that as well, it gives us a lot more scope for deploying staff across an area."

PoC comes of age

The concept of push-to-talk over cellular has been around for years, although it has shown little sign of making serious inroads into business radio activities up to now. However, Push to Talk UK's Tim Allerton believes that some critical infrastructure investments made by his company have now created a PoC service which works smoothly and dependably. These include the use of fixed, dedicated APNs (Access Point Names) for connecting to Vodafone and Orange, and assigning a fixed IP address to each YouPoC sim card. In this way, delays through the network are cut to a minimum, loss of voice packets is eliminated and there is less risk of calls being dropped during handovers from one base station to the next.

Also helping to reduce the critical Link Establishment Time (LET) is PTT UK's dedicated 100 Mbit/s resilient 'pipe' into the Vodafone GPRS network core. With these improvements, the company claims to have pushed LET below one second, to a level which it believes is satisfactory for general PMR use.

"It's all about quality of service", Mr Allerton says. "And that has been an important project, so that we can say to people who have been used to PMR radio that this is as good as PMR radio, and it's also national coverage and national group coverage – and of course having the ability to do dispatch from a laptop or a PC. For example, we had Cumbria Mountain Rescue using it from a laptop in the back of a Land Rover, just on mobile broadband. And that allowed them to do control. The flexibility is that your control room is wherever your PC is."

Other early users of the YouPoC PTT service include Group 4 Security, Amey Construction and an international road haulage operator.

A deal for dealers

Push to Talk UK is supplying the service through more than two dozen PMR suppliers, who contribute the experience and skills necessary to support business customers. These dealers not only sell the radios but receive a share of the subscription revenues. "The end customer will sign up for a three, four or five-year contract", Mr Allerton explains. "The reseller gets that revenue share over three, four,

five years, depending on whatever it is – with no major capital investment except for the sales investment. It's a bit like Dolphin used to be, but this works. It is a good deal for them. They obviously resell the radio, so they get the capital on the radio, and then they get the revenue share on the service. And these are fairly long-term contracts."

For the customer, there's a convenient flat-rate charge for the PoC service, on a 'use it as much as you like' basis, of £1 a day per phone. "It's a pound a day and there is no restriction", Mr Allerton says. "And that's on the highest tariff. The lowest tariff, I think, comes out at 46p – for national group radio!"

Even international group radio is possible, if you don't mind taking your chances with lengthening LETs on foreign GPRS networks – he and his staff have already tested three-way international group calling in Africa.

However, having to buy the phones up-front might seem a less appealing proposition than free handsets from the nearest cellular supplier under an airtime contract. But Mr Allerton says: "You can get it free if you sign a GSM-and-PTT contract: we will happily do that because we will subsidize it with the commission from Vodafone and O₂. We are starting to offer it on various Nokia devices and Symbol devices. But the simplest form is PTT-only. There's no subsidy on that... But, having said that, because it's a mobile phone, it is significantly cheaper than a PMR radio."

He also emphasizes the value of the rugged Sonim phone for PMR-style work. "If you want to say, 'Look, this is a good enough product to replace your PMR radio', the phone has to be truly ruggedized to be able to withstand the inclement weather, the drop, the tread-on. The Sonim product is exactly the right product for that."

New directions

At Matlock, Russell Peacock is beginning to think about exploiting the potential of the new handsets further. "Once business here grows, we'll start to identify other areas that maybe the radio can help us with", he says. "The tracking thing would be quite interesting. It would be nice to see exactly where they are, because we kind of rely on them to put into their handhelds... every street they go into, they have to put into their handhelds, and at the end of the day we can print off a report. But how infallible is that? That report that comes off the handhelds, that's what we use to invoice, so it's absolutely critical that it's accurate and that our wardens are using it correctly and we are compiling the data correctly. It is vital. So a tracking system would be very interesting."

In the meantime, he declares himself highly satisfied with his PoC system. "I've got absolutely no complaints at present, none", he adds. "It's working as we wanted it to work. Costs are higher than maybe we need at the moment because we are using the two facilities [GSM as well as PoC], and that's a decision I have to make as to how we reduce that. But it's budgeted costs – it's not over and above what we expected."

"From the user interface point of view, everyone knows how to use them. And if you speak to any of our team managers here, they are a lot happier now they've got that dispatcher unit in. They find it a lot easier to use. So, absolutely no problems at all."



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