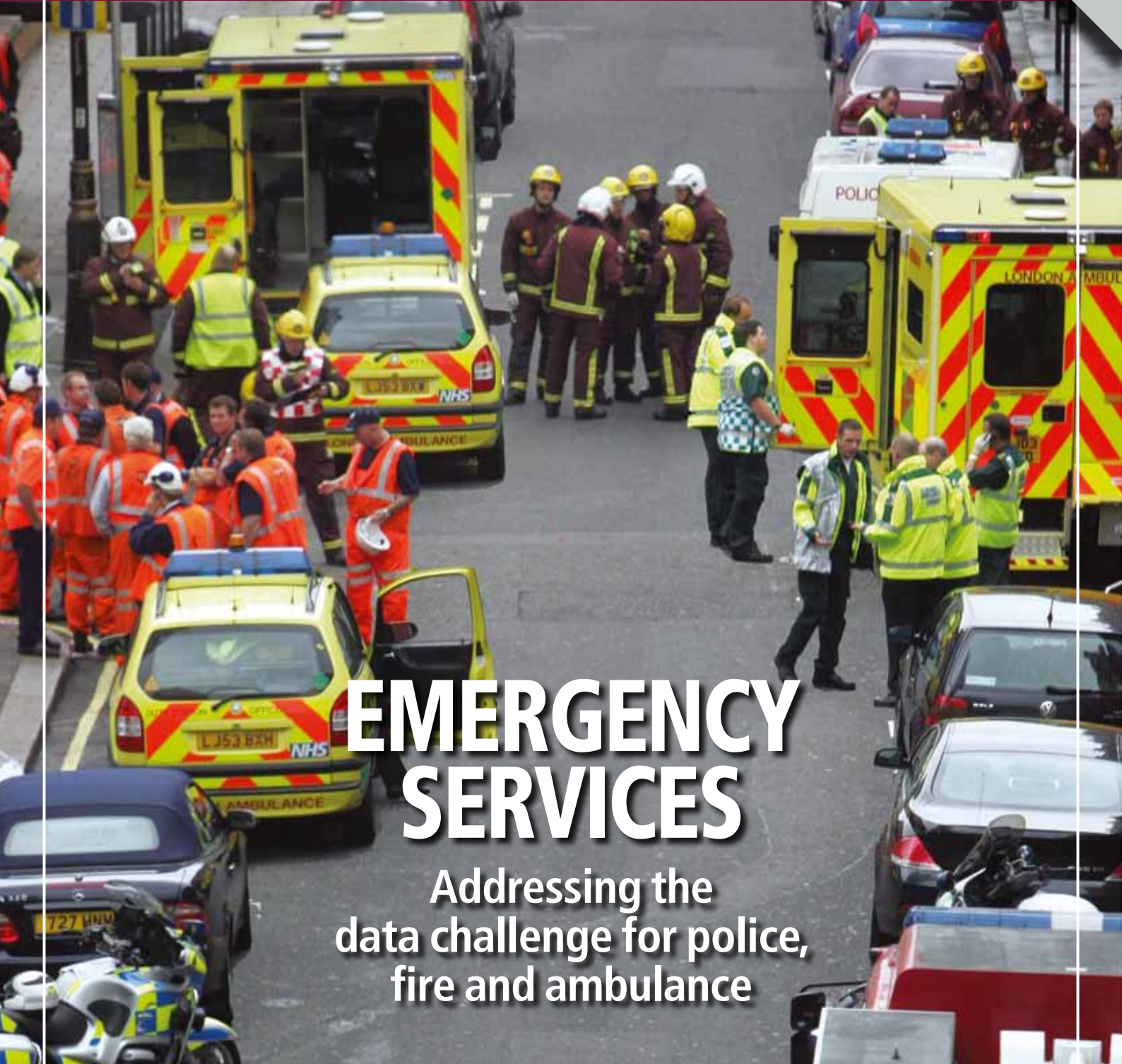


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# Bulgarian Police deploy Nexedge radio system

Kenwood and its local distribution partner Sectron have recently completed delivery of a country-wide installation of a Nexedge two-way radio system for the National Police Service in Bulgaria. **James Atkinson** reports

Police forces all over the world are moving their voice communication services from analogue two-way radio to digital. Bulgaria is no exception and back in 2008 it began the process of upgrading the analogue radio system used by the National Police Service (NPS) to a digital one.

The NPS is an agency of the Ministry of the Interior, responsible for maintaining public order, investigating and counteracting crimes. Ivan Dimitrov, Director for Communications and Infrastructure Systems in the Ministry of the Interior (MoI), explains that the move was partly made in response to an EU directive.

'In 2005, the EU issued a directive to clear certain bandwidths so they could be released for other purposes. So, that presented us with an opportunity to upgrade the NPS radio system,' says Dimitrov. He adds that the eventual move to an FDMA digital radio system using 2 x 6.25KHz channels from the previous 12.5KHz channels had the advantage of providing a much more efficient use of spectrum.

## Mission requirements

While aspects such as cost, spectrum efficiency and the ability to enable better ways of working for police officers were all important, Dimitrov points out that they were not necessarily the guiding principles behind the contract.

'Sometime in police life cost is not the primary consideration,' he explains. 'It is about helping to save lives by giving police officers a tool that is their lifeline and that enables

them to do their job more efficiently. But of course it is beneficial to have a radio system with built in GPS that enables us to track where the officers are and identify who they are from the radio ID.'

When it came to choosing a digital radio standard, Dimitrov says the tender was open to any system and all manufacturers. Generally, those European countries that have made the switch to digital radio systems have opted for TETRA or Tetrapol with the odd one or two choosing P25.

Bulgaria did have a TETRA system in use with certain specialist units and Dimitrov explains that one of the key requirements for the NPS contract was that the winning solution had to be able to connect to those TETRA radios, as well as the radios used by the fire brigades, ambulance service, civil defence force and so on.

A sophisticated encryption system and user authorisation protocol was also a prerequisite. Dimitrov notes wryly that Balkan criminals had got rather good at listening in to the police analogue radios and any replacement system had to put an emphatic stop to that.

Another vitally important requirement was that the Bulgarian Police expect to use the radio system for around 15 years. The MoI therefore wanted a reliable supplier with a sustainable business that would be around for that length of time to support the system. It also had to have the right technical, repair and training expertise in place to fulfil that need. In addition,



RADIOS... The Bulgarian police are using a mix of mobiles (left), hand portables and fixed stations

the system had to be easily upgradable to keep pace with developments in modern digital radio systems.

## The tender process

The open tender was handled by a special division within the MoI responsible for looking for new products and systems in the world of communications. Three companies made the shortlist, including Kenwood Electronics with the bid spearheaded by its long term Bulgarian distributor Sectron (the relationship celebrated 20 years in 2012).

Dimitrov says: 'It was a complex evaluation with many presentations before we announced the winner. Besides the technical considerations, we evaluated the quality of their service, training capabilities, the time they took to

react to problems and so on. The winning company had to have well trained specialists all over the country. So, the manufacturer had to declare and confirm that their local partner really did have properly trained staff with the necessary capabilities to service the equipment.'

The Kenwood/Sectron bid came up with the best price and the best quality parameters. Sectron has offices in seven Bulgarian cities, meaning it can easily service the needs of the police across the whole country. It also offered a six year warranty service on the equipment, which appealed to the MoI.

The chosen radio system is from Kenwood's Nexedge range, which uses the NXDN protocol. The Bulgarian NPS contract marks a major milestone for Nexedge, as it is the first time a national front line police service has chosen the system for its mission critical communications.

Nexedge features an all IP backbone which means it can be connected to other existing radio systems, including TETRA, with the right air interfaces/gateways

installed in command and control centres.

Georgi Videnov, Vice President of Sectron, says: 'The Kenwood Nexedge system was the only tender to completely solve the needs of ordinary police officers. It is simple and easy to use and it is much harder, if not impossible, for criminals to listen in.'

Trevor Wright, Area Export Sales Manager in Kenwood's Communication Division, adds: 'Nexedge is an FDMA solution, which is far better for large land masses than TDMA solutions such as TETRA, as it propagates much further. You therefore need far fewer base stations and switches, which cuts down the infrastructure cost enormously. It also has a faster handover than TDMA. Formula 1 teams like it for that reason, because it works very fast.'

One other reason for the successful Kenwood/Sectron bid is that Sectron's sister security company, COT-161 had already issued its security staff with Nexedge radios. 'It meant we knew what we were trying to sell,' says

Videnov. 'It helped us give the MoI a feeling of confidence that we could support them, as we believed in the system and used it ourselves. We were also able to let the MoI people test the system live and get a feel for it.'

'When we switched to Nexedge we found it was at least 30% better than the previous analogue radios,' he continues, 'and the 6.25KHz channel spacing is much better at penetrating buildings and comes with much better voice quality. There is no degradation even at the edge of the cell.'

## Installation and roll out

The framework contract was divided into three phases, with the first two covering the capital Sofia and the last one the rest of the country. Phase 1 began in 2010 and Kenwood-Sectron faced a ferociously tight delivery deadline of early December. Wright recalls: 'They added 200 mobile radios to the initial order at the last minute and we had to arrange a very fast delivery from Singapore to fulfil it.' Phase 2 took place in 2011,



PARTNERS... Ivan Dimitrov, Georgi Videnov and Trevor Wright

completing coverage in Sofia. The final phase in 2012 covered the rest of the country. Sofia and the major cities are using a multi-site trunking solution, but because of the relatively small number of radios deployed in rural areas, it was decided on cost grounds that a conventional radio system supported by repeaters would be sufficient.

The system is one of the largest Nexedge deployments in Europe comprising a mix of base stations, repeaters, fixed station, mobile and portable terminals. An extra contract for ancillary products such as combiners, voice recorder systems, wireless headsets and antennas was also delivered in 2012.

Sofia sits in a bowl in the mountains, which makes designing the radio architecture relatively simple as a central base station can cover much of the city, with several others deployed to provide fill-in coverage. A full RF evaluation was undertaken to determine the best coverage versus cost scenario.

Dimitrov says: 'We have a lot of experience of working with communications systems here, so we were very clear about what we needed and how we wanted our coverage requirements to be met and this was fulfilled.'

## Training

Sectron has its own training room at its Sofia headquarters, so police staff are taken there for their initial training in the Nexedge system and for subsequent upgrades. Wright says: 'The Nexedge protocol has four or five upgrades a year, so we come along and train up the

Sectron guys and they in turn train the police. This is a regular service we and Sectron provide our customers.'

So, how are the Bulgarian Police finding the new system? Dimitrov says: 'They are very happy with the quality of the equipment. Some of them have had it for up to three years now and there have been very few problems with the radios. No more than about five have needed repair and that was done very quickly.'

Wright points out: 'It is very rare for us to have a QA problem. Our failure rate is less than 0.1% of our total global sales in terms of reported returns. Generally, it is for hand portables that have been dropped or immersed in water.'

## The future

Looking forward, Dimitrov says one of the MoI's goals is to educate the police to make better use of the radio's wider feature sets than just push-to-talk. 'We are putting a lot of effort into this, as we believe it will increase the efficiency of their work.'

He also says the conventional radio sites deployed in the rural areas may be upgraded to either single or multi trunked sites to take advantage of the higher Nexedge security and encryption services that come with it – as is the case in Sofia.

'We've succeeded in delivering a really good project. It is a good sign of our partnership that other ministries and government agencies are looking at what we have done and are very interested in it,' concludes Dimitrov.

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Ivan Dimitrov, Director of Communications and Infrastructure Systems, Ministry of the Interior

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