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Saudi Arabia

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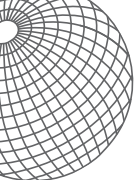
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DAMM



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Border Interoperability



Norway and Sweden are adding technology to communicate across country borders.

Safe Cities



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Safe Cities of the World

Safe city is a hot term right now in mission-critical communications circles, and as is often the case in our industry, the term means different things depending on whom you ask and what area of the globe the concept is deployed.



Singapore just awarded four consortia contracts for a safe city test bed. The goal is to "to improve situational awareness, interagency coordination and anticipation of security threats while optimizing the use of manpower." See Page 14 for more details.

Video surveillance is one technology often deployed as part of a safe city concept. After the Boston Marathon bombings in the United States this year, video captured at the scene helped police find and capture the suspects within a few days.

But public video brings up questions of privacy and how much governmental monitoring is too much. Jolly Wong, telecommunications engineer for the Hong Kong Police Force, said Hong Kong is very careful to balance privacy and video surveillance. He said Hong Kong, a safe city based on very low crime rates, encourages demonstrations and public gatherings. Often, video technology might be brought in to monitor large crowds of people, but it's removed following the gathering so the government is not infringing on citizens' rights to privacy.

Public-generated information is also part of the safe city concept. With more mobile devices come more texts, emails, photos and video clips sent from citizens to public-safety officials. Social networking also comes into play with news and details of events spreading quickly through Facebook or other platforms.

All of this leads to higher expectations for public-safety services by citizens. In the United States, there is an education campaign under way for young adults who have the expectation that they can text the nation's

We value your opinions! Please email your feedback to me at swendelken@RRMediaGroup.com.

emergency services number, 9-1-1, and get emergency service. This is not the case. The U.S. 9-1-1

system isn't set up to handle texts and they generally are not received at dispatch centers, but many technology-savvy citizens do not realize this.

The safe city trend and concept will continue to evolve, especially with government budget reductions in many countries. Each country and region will adopt and adapt specific to the demands in their area. If you have interesting information on how your region of the world interprets a "safe city," I would love to hear from you.

Sandra Wendelken

Sandra Wendelken, Editor
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RadioResource International delivers wireless voice and data information for mobile and remote mission-critical operations for professionals who reside or do business outside the United States and Canada. The magazine covers private and trunked mobile radio, wireless data, location technologies, public safety communications, microwave radio, satellite, paging/messaging, remote monitoring, and other wireless applications. Editorial content is international in scope and encompasses emerging technologies, industry reports and trends, innovative applications, product information and comparisons, news, standards, and troubleshooting tips.

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Europe's Broadband Spectrum

Editor:

Two things are mixed up; we have duplex shift, which is not that important for Long Term Evolution (LTE) performance, though the wider the better. But the bandwidth is important, meaning the bandwidth for uplink and downlink channels. Indeed, can an organization, public or private, ever claim a bandwidth of 10 megahertz for its own dedicated use?

In addition to the dilemma of the granted/allowed bandwidth for the LTE uplink and downlink for private use by a customer, is the question of how much RF power would be allowed for an LTE base station. In harsh (industrial) environments, a frequency of 2.6 GHz (the frequency band that is now "sold in auction" to large service providers here in the Netherlands) would prove to be a problem to ensure coverage in "steel" environments, such as shipping container storage yards, steel factories with buildings containing a lot of steel machinery and the (petro) chemical industry with a lot of steel infrastructure.

The benefits of the wideband LTE communications are always mentioned, but the network infrastructure needed

to give coverage "everywhere" is not often mentioned or thought about.

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With large infrastructures to manage and maintain, radio communication networks are essential to improve team work, increase the safety of the employees and improve productivity. Data communication for remote wellhead, reservoir and pipeline monitoring as well as people and vehicle location tracking can be achieved by the same radio network, thereby adding additional value to the radio network. Over the past several years CONNECTEL has implemented a number of TETRA radio communication systems worldwide achieving full satisfaction of customers in the upstream, midstream and downstream segment of the oil & gas industry.



CONNECTEL is an authorized Motorola distributor with over 22 years of know-how in the design, distribution, installation and service of analogue and digital radio communication systems. Ranging from basic analog to digital trunking systems, ConnectTel provides solutions for customers throughout Central and Eastern Europe, the Baltics, Russia, Africa and the Middle East.

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EUROPE

NXDN, dPMR Make Push in Europe, Worldwide

Although Europe is dominated by TETRA technology for public-safety communications, NXDN and digital Private Mobile Radio (dPMR) are seeing uptake and sales in other mission-critical communications markets as new products roll out.

Kenwood launched its NXDN product line, NEXEDGE, in Europe four years ago, and the technology "is selling well," said Mike Atkins, managing director of Kenwood Communications European Headquarters. "Market share is not as high in Europe as in the United States due to other technologies being established in the digital market, but we are happy with the success of NEXEDGE and have some major systems in operation now," he said.

When Icom launched NXDN worldwide, it was initially intended to meet the U.S. 2013 VHF and UHF narrowbanding deadline. However, the technology has also helped many regulatory administrations around the world implement licensing rules for 6.25-kilohertz technology years before they were expected too, said an Icom spokesman. "There is also the realization that NXDN and dPMR will be viable solutions even when 12.5-kilohertz channels become full, so any investment in these protocols now is literally long term and future proof," he said.

Markets for NXDN include military, emergency services, airports, utilities, railways and hospitality, executives said.

Icom's dPMR Mode 2 products are selling well, and the company's dPMR Mode 3 products, developed in collaboration with

Fylde Micro, are now available, allowing dPMR product choice from license free to multisite trunking. "We expect dPMR to pick up a lot more in Europe and other parts of the world as well," the Icom spokesman said.

Kenwood is launching dPMR products within the next few months. The company recently announced successful dPMR interoperability testing, along with Icom and Kirisun. NXDN is aimed more at the systems market, whereas dPMR is aimed at low-cost, low-complexity market sectors.

"dPMR markets are similar to those for NXDN, but in addition we see dPMR being particularly strong in the business/industry (B/I) market, as the range of FDMA at 6.25 kilohertz is such a strong bonus for peer-to-peer users," Atkins said. "In Europe, the transition of analog to digital in small- and medium-sized users is gaining pace strongly, so we see dPMR benefitting from this."

The Icom executive said that from a technology standpoint, NXDN and dPMR are quite similar, but the Icom NXDN trunking solution is centered toward migrating logic trunked radio (LTR) systems to digital, and the dPMR trunking solution is more focused on MPT 1327 migrations. Other small differences such as system scalability — 48 sites and 60,000 users for NXDN versus 1,000 sites and 500,000 users for dPMR — allow Icom to offer a flexible solution based on the needs of the end user.

Security, the United Nations, diplomatic services, local councils and transport have



seen the main uptake of dPMR in Europe and other areas of the world, he said.

Kenwood has a well-established distribution network with local knowledge that helps its FDMA push. "Covering all of Europe, Middle East and Africa (EMEA) is tough as the markets differ so much in terms of specification, regulation, currency, import regulations, language and culture, so these local relationships are all important," Atkins said.

"When you look at the numbers, FDMA in both analog and digital is still by far the most prevalent technology out there," the Icom spokesman said. "We see plenty of room for both FDMA and TDMA solutions in the market, but every radio manufacturer out there, bar TETRA-only suppliers, is still earning the mainstay of their business revenue from FDMA in one form or another. NXDN and dPMR just add to what has already been a reliable radio platform for decades."

BRUSSELS, Belgium — In spring 2014, ASTRID will launch a broadband data service called Blue Light Mobile, tuned to the needs of the public safety and security (PSS) services. At the end of a tender procedure, ASTRID selected three specialist partners for the service: Astrium, Belgacom and Halys.

The ASTRID radio network is based on TETRA technology, which doesn't have broadband data capabilities.

ASTRID will therefore provide the Belgian PSS sector with the option to use commercial 3G networks via a specific service. ASTRID also takes on the role of mobile virtual network operator (MVNO) by offering services via third-party networks.

Using an ASTRID subscriber identity module (SIM) card, the various PSS services will be able to access databases safely, systematically

ly and quickly, as well as send and exchange documents, emails, photos and videos via all existing 3G and future 4G networks in Belgium. While ASTRID SIM cards have a preferred network, they will automatically switch to another network the moment that coverage is lost. ASTRID said communications from PSS services must always be given a high priority on the network. The carrier provides high availability, and

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guarantees security and offers support 24/7 via the ASTRID Service Centre.

ASTRID divided the project into three components. Companies could tender for one, two or all three components. The contract was awarded in April.

The following three companies submitted the best offers for each component:

■ Component 1 – Halys, with responsibility for the development, supply and management of the ASTRID SIM cards;

■ Component 2 – Belgacom, with responsibility for the roaming hub, data travel and resources for management and telecom integration with ASTRID; and

■ Component 3 – Astrium, with responsibility for the supply of equipment for the management and control of all crucial functions of the service management.

ASIA/PACIFIC

ASTANA, Kazakhstan — Thales, with industrial partner Company AGAT (Kazakhstan), announced service of one of central Asia's largest TETRA radio networks with the Republic of Kazakhstan security forces. Thales and AGAT deployed the network across the entire country for the Kazakhstan Ministry of the Interior.

Thales' solution provides nationwide mobile voice and data services, enabling the ministry and its various agencies to better serve the community and improve security for citizens. In addition, the network architecture ensures a high level of resilience and availability to support the country's security forces in their missions, even in the event of a major incident or crisis, company officials said.

Thales delivered and commissioned a total of 84 radio relay sites

and deployed supervision stations in 16 cities around Kazakhstan to monitor and locate mobile equipment.

"The solution we have deployed meets all our customer's requirements, particularly the ability of each site to provide a complete operational service even when disconnected from the core network," said Jean-Michel Lagarde, Thales deputy senior vice president in charge of secure communications and information systems. "Our customer has commended us for the level of commitment of the Thales teams during deployment and commissioning and into the support phase."

MIDDLE EAST/AFRICA

TANGIERS, Morocco — Cassidian completed the integrated security system for the protection of Tanger Med harbor in northern Morocco. The Integrated MARitime SECurity



Midian's NEW GPS Speaker Mics

Midian's GPS speaker microphones operate as normal speaker microphones for portable two-way radios, but offer the benefits of GPS location reporting. The GPS Speaker Mics are available with voice security options. These include the VS-1200-SM1G frequency domain scrambler, VS-115-SM1G, rolling double inversion scrambler, VS-1150-SM1G double inversion scrambler and the VS-1050-SM1G voice inversion scrambler. Midian's GPS Speaker Mics offer the following features:

- Location reporting options:
 - PTT: Reports GPS coordinates when the user presses and/or releases the PTT button.
 - Man-Down/Lone Worker: When the unit receives no user interaction or detects a lack of motion the unit will send an Emergency ANI with the GPS coordinates.
 - Query: The dispatcher can poll individual units for their location (except TS-120-SM1G)
- Decode capabilities: Selective Call, Query, Radio Disable/Enable, Remote Monitoring (except TS-120-SM1G)
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World News

(IMARSEC) system is now in full operation.

The system encompasses video surveillance and video content analysis, maritime surveillance, an access control system that includes biometry and optical character recognition, a public address system, a communications network and a control room. The integrated security system combats illegal immigration, terrorist attacks and smuggling on the territory of Africa's biggest port.

Cassidian also installed its port security management system, allowing operators to manage the integrated subsystems with a single, unified interface. The system is operated by most of the port security authorities such as customs and police, thereby fostering cooperation between these organizations.

Once Tanger Med II, the extension of the current facilities, has been completed in 2015, the harbor will have a total capacity of 8.5 million 20-foot equivalent unit (TEU), making it the biggest port in the Mediterranean Sea. The construction of Tanger Med was launched in 2004, and the first commercial operations began in 2007. Cassidian began the project in 2008.

INTERNATIONAL

NEWMARKET, Suffolk, United Kingdom — Cobham acquired **Axell Wireless**, provider of distributed antenna systems (DAS) and wireless coverage solutions, for up to £85 million (US\$130.3 million). Cobham paid an initial £60 million (US\$92 million) for the business with a further conditional cash consideration of up to £25 million (US\$38.3 million) being payable during 2014 and 2015, contingent on future performance.

Axell will continue to be led by the existing management team operating within Cobham's Antenna Systems Strategic Business Unit, part of Cobham's Aerospace and Security Division. The acquisition of Axell will enable Cobham to accelerate its focus

Singapore Awards Safe City Project to 4 Consortia

Four consortia led by Accenture, AGT International, Cassidian and NEC Asia Pacific were selected to participate in the Safe City Test Bed spearheaded by the Safety and Security Industry Program Office (SSIPO). The Ministry of Home Affairs (MHA) and the Singapore Economic Development Board (SEDB) established the SSIPO to develop a safety and security industry with innovation capabilities.

The consortia were selected after a call for collaboration, which invited companies to submit proposals for an innovative safe city concept in Singapore based on an information-sharing model developed by selected government agencies. For 15 months, the government agencies and consortia will work closely to build and test solutions to enhance the agencies' operational capabilities and optimize the use of resources.

The Safe City Test Bed aims to enhance innovation capacity in industry to create new solutions that enable government agencies to integrate information and sensors in an automated manner, and derive analytical insights all in real time. These capabilities, built on top of existing operating systems, are expected to improve situational awareness, inter-agency coordination and anticipation of security threats while optimizing the use of manpower.

The project includes the development and live testing of innovative technologies and advanced analytics, such as video content, e-sensing and smart city sensors. This will provide added intelligence and operational benefits to the govern-



ment agencies involved — police and civil defense forces — as well as public urban transport, environmental and utility agencies, with the objective of keeping Singapore safe and secure.

"Technology is a force multiplier that can help government agencies cope with the increasing demands and complex security challenges that arise from rapid urbanization," said Anselm Lopez, co-director of the SSIPO and MHA director of capability development and international partnerships.

By partnering with industry in the test bed, the Singapore government aims to achieve two objectives: leverage the expertise and resources of the private sector to develop new capabilities not yet available in the market to enhance its efficiency and effectiveness, while at the same time build up the safety and security industry in Singapore to tap its high growth potential in the region.

Singapore's experience in the Safe City Test Bed will provide insights on how technology and analytics can aid urban management and public safety and will be shared at World Cities Summit 2014.

on the commercial marketplace. Further it provides Cobham access to the DAS and wireless coverage segment with an additional customer base in an adjacent market.

"Working with Cobham, a pioneer in RF, antenna and wireless technolo-

gies provides Axell with a great opportunity to extend our leadership in the DAS and coverage market," said Ian Brown, CEO of Axell Wireless. "We expect as a result of joining Cobham to be able to present our customers with an enhanced set of

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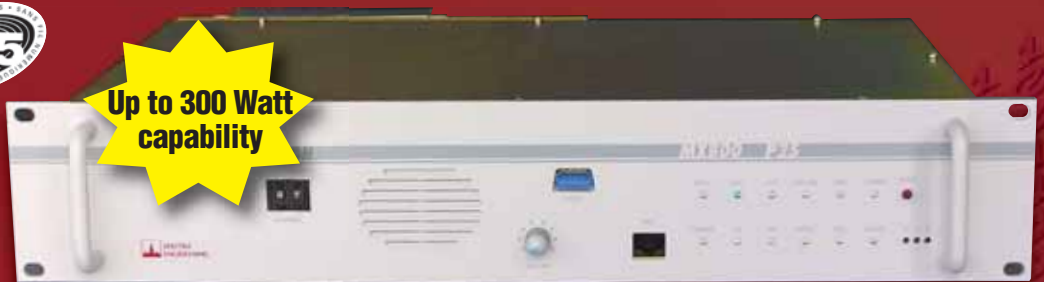
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solutions, complementary technologies, and a wider and more comprehensive global presence.”

Cobham executives said Axell's markets have been growing strongly, driven by rapidly increasing demand for indoor mobile data traffic and more stringent public-safety regulations that support the ability of emergency services to communicate within large buildings and at international events. Axell has about 250 employees worldwide and is headquartered in Chesham, United Kingdom.

DERBY, United Kingdom — Radio communications company **Simoco Group** rebranded its four regional businesses under the unified brand name Simoco. This will apply to Simoco EMEA (formerly Team Simoco), Simoco Americas, Simoco Australasia (formerly ComGroup) and Simoco Asia Pacific.

The rebrand to create a single

dPMR, DMR Manufacturers Complete Interoperability Tests

Two separate sets of interoperability tests were conducted among vendors of two digital technologies.

The dPMR Association held its latest interoperability testing session in April at JVC Kenwood headquarters in Shin Koyasu, Japan. Eleven firms manufacture digital Private Mobile Radio (dPMR) gear.

JVC Kenwood, Icom and Kirisun successfully completed the tests overseen by Derek Love, chairman of the Technical Working Group of the dPMR Association. The tests confirmed all products meet European Telecommunications Standards Institute (ETSI) Standards TS 102 658 Modes 1 and 2.

JVC Kenwood completed tests for repeaters, mobile radios and portables. Icom completed tests for portables and mobile radios. Kirisun completed tests for

portable equipment to Mode 1 of dPMR.

Separately, the DMR Association completed three successful Digital Mobile Radio (DMR) interoperability test sessions. Two sessions were for DMR Tier 3 (trunked operation), and the third session was for Tier 2 (conventional operation).

The Tier 2 tests took place between Selex ES and Simoco. The Tier 3 sessions took place between Selex ES (infrastructure) and Hytera (terminals) and Selex ES (infrastructure) and Tait Communications (terminals).

The completion of these tests brings the total number of DMR manufacturers offering DMR interoperability (IOP) certified Tier 2 products to eight, those offering DMR IOP certified Tier 3 products to four, and the number of completed DMR bilateral test sessions to 15.

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corporate identity includes the launch of Simoco's new global website, which provides detailed product information and support from one platform, structured to deliver regionally specific content.

"We look forward to continuing our investment in new technology, supporting our dealers and distributors through our global partner program, and creating new solutions for our customers," said Ian Carr, CEO of Simoco Group.

"What this means for our existing customers is that it will be business as usual as we continue to supply exciting and innovative products and deliver exceptional customer service. Our mission remains clear and simple — to build on our expertise in development and distribution of radio communications products across the world, succeeding through innovation, integrity and teamwork."

CAMBRIDGE, United Kingdom — **Sepura** unveiled new branding of recently acquired **3T Communications**. The rebranding reflects the expansion of Sepura's activities with 3T Communications, a TETRA infrastructure supplier, to deliver a complete end-to-end TETRA solution.

To consolidate its assimilation into Sepura, 3T Communications will become Sepura Systems. Sepura's new look reflects the integration of the two companies and marks the organization's transition from the design and manufacture of TETRA digital radios to provider of full critical communications solutions.

"Through the acquisition of 3T Communications, we have significantly strengthened our competitive position, whilst underlining our drive to further enhance shareholder value," said Gordon Watling, Sepura's CEO. "It's therefore appropriate that our branding should reflect the integration of the two business strands, and Sepura's transition to a 'one-stop shop' that addresses all of

UAE Considers 700 MHz for Public-Safety Broadband Spectrum

The United Arab Emirates (UAE) set aside spectrum in the 700 and 800 MHz bands for broadband services and said 2 by 10 megahertz of spectrum could be set aside for public protection and disaster relief (PPDR) applications.

This sets the stage for potential interoperability with the United States for public-safety broadband.

The UAE Telecommunications Regulatory Authority (TRA) announced its band plan for 700 MHz and released spectrum in the 800 MHz band for mobile broadband services. "The TRA believes that allocating these bands to mobile broadband with the equivalent global device ecosystems will best serve the UAE public interest, driving down costs and minimizing interference along borders," a statement said.

By combining the 800 MHz band plan for Europe, Middle East and Africa (EMEA) with the lower duplexer (2 by 30 megahertz) as a baseline of the Asia Pacific (APT) 700 MHz band, UAE will be the first country in the region to reap the benefits of both bands, which will support affordable network rollout, benefiting more

Dubai



of the population with mobile broadband connectivity, the regulator said.

In addition to the possibility of an additional 2 by 10 megahertz for PPDR applications, 5 megahertz has also been considered for direct mode operation (DMO) for public-safety applications.

"By maximizing the spectrum for mobile broadband in harmony with the growing economies of scale for both bands, the TRA decision will enable nearly global interoperability and roaming," said H.E. Majed Al Mesmar, deputy director general for telecommunications sector. "The UAE is predicting a rising demand for global harmonization of the APT 700 MHz band benefiting in the growing ecosystem of devices from Asia Pacific across the Middle East and Africa, through to Latin America."

our customers' critical communication needs."

SØNDERBORG, Denmark — **DAMM** and **Hytera Mobilfunk** finished the official multivendor interoperability test session with their TETRA infrastructure and all major TETRA terminal vendors.

DAMM completed the latest interoperability (IOP) test between its TetraFlex infrastructure software and terminal providers. The multitest interoperability sessions were performed from 4 February to 19 April under the supervision of ISCOM, the TETRA + Critical Communications Association (TCCA)-appointed independent certification authority.

The TCCA-defined IOP certifica-

tion testing process is carried out in a multivendor environment and tests the interaction between products from different manufacturers. The full IOP tests consist of about 200 single tests on each radio equipment to ensure that all aspects of the software have been tested.

Hytera's TETRA system ACCESS-NET-T IP was tested with all relevant terminal manufacturers between 14 January and 13 March as well as 22 – 26 April at Hytera's testing facility in Bad Münden, Germany. The current test session covered the trunked mode operation (TMO) and all related features of the air interface.

The final certificates and test reports are expected to be published on the TCCA website by 5 July.



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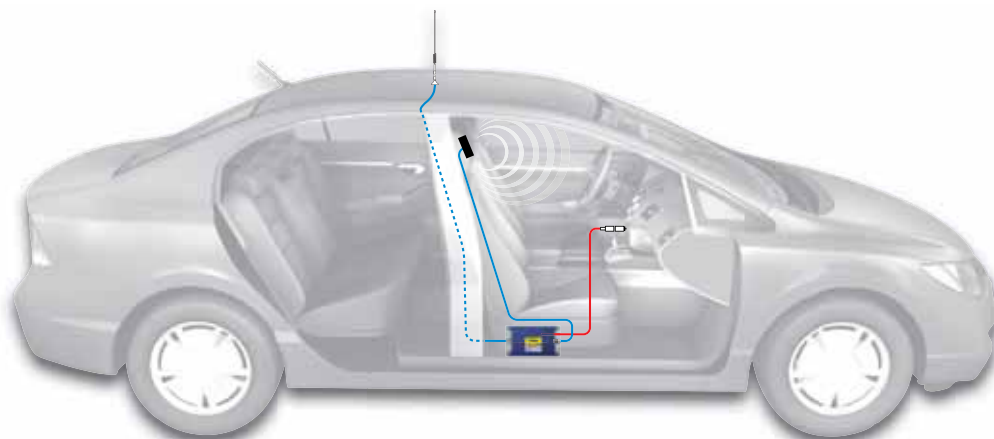
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Europe Contemplates Public-Safety Broadband Allocation

Critical Communications World 2013 highlights future spectrum decisions.

By Sandra Wendelken

Photo courtesy ETSI

The hot topic at this year's Critical Communications World (CCW) centered on the European's community plan to lobby for public-safety communications spectrum in the 400 or 700 MHz bands.

Officials from the European spectrum community said the World Radio Conference (WRC) in November 2015 is its best and unique chance to get a dedicated spectrum allocation for Long Term Evolution (LTE) deployments for public safety. While work moves forward on standards for public-safety features for LTE, parallel work is going on with spectrum harmonization. The best-case scenario will see the two efforts converge at about the same time.

A report from the European Conference of Postal and Telecommunications Administrations (CEPT) Electronic Communications Committee's Working Group Frequency Management (WGFM) concludes that 2 by 10 megahertz of spectrum is needed for future European public protection disaster response (PPDR) wide-area networks. In addition, two candidate bands, 400 – 470 MHz and 694 – 790 MHz, are being investigated for PPDR spectrum. See "Narrowbanding to Achieve Broadband in Europe" on Page 26.

A report from the Global Standards Collaboration (GSC) Emergency Communications Task Force looks at standards for a globally coordinated approach for emergency communications before, during and after a disaster. European Telecommunications Standards Institute (ETSI) and other global standards groups contributed to the GSC report.

Adrian Scrase, ETSI chief technology officer (CTO), said dedicated public-safety spectrum is being considered by regulators in Europe. "The discussion is ongoing for requirements for public safety," he said.

"The World Radio Conference (WRC) in November 2015 is a unique opportunity to have PPDR requirements for dedicated broadband spectrum incorporated into the WRC decision," said Jeppe Jepsen, director of broadband spectrum and board member of the TETRA + Critical Communications Association (TCCA).

"PPDR is on the agenda of the WRC," said Jepsen at CCW, which was held in May in Paris. "It is a political

question, and TCCA has initiated a campaign to convince decision makers. We are working on economic white papers to bring out the benefits for public safety."

In fact, highlighting the economic benefits of spectrum for public safety is a major point of the European discussion with regulators. Tom Quirke, vice president and general manager, global TETRA organization, Motorola Solutions, said its research showed that for every \$1 spent on public-safety communications, \$5 of economic benefit is gained.

Officials are also highlighting the need and benefit for public-safety officials. Hans Borgonjen, senior coordinator international standardization, Vts Police Netherlands, is working on an applications matrix expected to be the "bible for frequency debates." The matrix includes numerous scenarios for when broadband could be a critical tool, and the matrix will be included in documents for governmental officials on why the spectrum is needed.

Gilles Bregant, director general, Agence Nationale des Frequences, said the industry must come together on several points to achieve its objective. First, which frequency band, 400 or 700 MHz, is best?

Next is the issue of LTE's 10-megahertz duplex requirement. "LTE works better with 10-megahertz channels," he said. "How can we find 10 megahertz in both bands, uplink and downlink? We must explain where you can get it or if you can make do without 10 megahertz."

Is it possible to have the spectrum harmonized in Europe? "We must find a migration path that is realistic," he said.

The November 2015 timeline may coincide with LTE standard products with public-safety features, although not mission-critical voice. Two public-safety features, direct mode and group communications, are slated to be in Release 12 of LTE, scheduled to be finalized in 2014 with commercial products to follow in 2015 at the earliest.

"There's no reason why broadband won't revolutionize public safety just as it did commercial broadband," said Balazs Bertenyi, chairman of the Third Generation Partnership Project (3GPP) Service and System Aspects (SA). "You just have to enable it, and the rest will happen." ■

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Oil fields around the world have recognized the importance of an effective communications system. Typically large petroleum-production and refining operations have employees dispersed among multiple sites who must be able to communicate and coordinate emergency efforts in challenging, sometimes dangerous, conditions. A system that supports and facilitates emergency communications can help save lives and minimize the damage that an accident at a site can cause.

An 11-site refinery in Saudi Arabia and a 70-site operation in Kazakhstan both recently updated their dispatch systems to consolidate and centralize their communications to increase efficiency and reliability.

Saudi Aramco

Saudi Aramco, Saudi Arabia's national oil company, is a fully integrated petroleum company that operates in the exploration, production, refining and marketing of petroleum, as well as petrochemical manufacturing. In 2007, Saudi Aramco decided to improve the emergency communications system that operates in its Riyadh refinery emergency control room.

Saudi Aramco requested "a console system that would integrate the Riyadh refinery's 11 hot-line telephone sets into a single dispatching console," says Eric Lozada, Radio Transmission Networks Division, Baud Telecom Co. (BTC), a systems integrator based in Saudi Arabia. The intention was to save space in the refinery's emergency control room and centralize the operation and management of its emergency communications, he says.

Through a selective, preferred-vendor bidding process, BTC was selected to help devise and implement the new emergency communications system. Zetron's TETRA digital console system was chosen for the project. During the implementation, BTC worked closely with Saudi Aramco to define

Oil and gas companies are centralizing communications technology to better monitor field personnel and equipment.

By Tina Blade and Michelle Zilis

the project's scope and design, and to ensure that its final implementation would meet the customer's needs.

"As part of the RFP (request for proposals), BTC presented Saudi Aramco with an item-by-item compliance statement to ensure that the customer understood the scope of the installation and the equipment it would require," says Lozada. "We also conducted a site survey to identify the needs of the operators who would actually be using the system."

A representative from Saudi Aramco was assigned to the BTC installation and commissioning team, which "was beneficial to the customer because it meant that one of their engineers would be involved in the process," he says. "This would give him experience with the new system throughout its implementation, assembly, setup, configuration, interconnection and operation."

The implementation was completed and turned over to Saudi Aramco Nov. 14, 2007. The installation consolidates the refinery's 11 hotline telephone lines — one for each of the refinery's 11 sites — into a single console system.

The TETRA infrastructure was provided by Cassidian and operates on 410 – 430 MHz spectrum. Each radio frequency dispatch terminal in the control rooms, control centers, process interface buildings and on boats are connected to Zetron remote control heads. There are 11,000 Motorola Solutions radios on the system.

The centralization of the communications greatly improved the company's ability to respond quickly and



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The intention was to save space in the refinery's emergency control room and centralize the operation and management of its emergency communications.

effectively to disasters and other critical emergencies. Now, in the event of an incident, members of the company's disaster team can all listen to conversations about an incident through the console system speakers in the emergency control room. "If they must conduct a multiple-site disaster operation, it is now possible for the emergency control room manager to talk to all 11 Aramco sites simultaneously through a single, intelligent, digital dispatch console position," says Lozada.

KazTransOil

The Kazakhstan state oil pipeline operator, KazTransOil, operated a communications solution based on single-site MPT 1327 trunking systems, which proved to be highly resilient and effective for many years. In 1995, KazTransOil enlisted the help of TNS-Service of Almaty, Kazakhstan, to support the communications system that runs along the oil transport pipeline.

KazTransOil operates a 6,500-kilometer-long pipeline network that runs through the country. The company must ensure the effective maintenance of the pipeline, which is no small task, partly because of the pipeline's considerable length. In addition, Kazakhstan's weather and terrain are harsh and unforgiving, which makes working conditions difficult. Effective communications are vital in such an environment.

In 2005, local system integrator TNS was asked to improve the system by upgrading and connecting its single sites into a multisite network. The purpose was to improve communications between the control room and those working at the 70 sites in the oil fields and along the pipeline.

The upgraded system adds intersite microwave links and intersite ports to the existing MPT 1327 equipment. TNS will also install Zetron's PC-based dispatch consoles to give control-room operators direct access to the MPT infrastructure. This will allow them to better supervise and monitor field personnel.

The upgrade is still ongoing but is already improving the effectiveness of communications along the pipeline. The final result will be a fully integrated, multisite, wide-area network. ■

Tina Blade is a marketing writer for Zetron. Michelle Zilis is managing editor of *RadioResource International*. Email comments to editor@RRMediaGroup.com.

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Narrowbanding to Achieve Broadband in Europe



Photo courtesy Cassidian Communications

A new report identifies spectrum for future broadband public-safety systems and plans to introduce a narrowbanding approach in Europe.

By Thomas Weber

The first deliverable report on the future implementation of mobile broadband applications for public protection and disaster relief (PPDR) in Europe was approved during a late May meeting in Amsterdam.

The European Conference of Postal and Telecommunications Administrations (CEPT) Electronic Communications Committee's (ECC) Working Group Frequency Management (WGFM), which includes cooperation among 48 European countries, approved the ECC Report 199 on user requirements and spectrum needs for future European broadband PPDR wide-area networks (WAN) during the 20 – 24 May meeting. The report addresses the user requirements and the spectrum needs for future Euro-

pean broadband PPDR WAN systems and was generated in the WGFM project team FM49 that deals with broadband PPDR issues.

European officials recognize that the PPDR needs of European countries may vary significantly. Therefore, this and future ECC deliverables dealing with the issues related to harmonization of the PPDR sector attempt to aid the creation of a high-level European regulatory and technical framework rather than to define the detailed regulatory and technical aspects. Such a framework would enable the deployment “under harmonized conditions” of interoperable systems capable of efficient cross-border PPDR operations. This is also mandated by article 8.3 of the Radio

Spectrum Policy Program in Europe.

The main conclusion of the report is that an amount of spectrum in the range of 2 by 10 megahertz is needed for future broadband PPDR networks. This is based on spectrum need assumptions and confirms earlier assumptions expressed by European Telecommunications Standards Institute (ETSI) in the system reference document TR 102 628, also asking for spectrum from 2 by 10 megahertz.

The calculation of the minimal spectrum needs was made using an incident-based methodology for operational scenarios. The methodology accounts for only data communications; voice communications may require additional spectrum depending on particular national requirements.

The methodology also takes into account the background traffic of PPDR forces in the area of an incident. The reference technology used for the calculations was Long Term Evolution (LTE) Release 10. The frequency ranges selected for use in estimating the necessary spectrum bandwidth are 400 and 700 MHz.

Mission-critical operational scenarios were chosen for the calculations. The Radio Communications Expert Group (RCEG) of the Law Enforcement Working Party (LEWP) and Airwave Solutions provided the detailed description of the scenarios. RCEG officially reports to Justice and Home Affairs (JHA) within the Council of the European Union. The scenarios included:

- Road accident
- Traffic stop police operation
- Royal wedding in London in April 2011 (a pre-planned event)
- Riots in London in August 2011 (an unplanned event)
- Disaster relief with no particular scenario because of the variation in scale of disaster events

CEPT ECC WGFM decided in Amsterdam on the candidate bands for future European broadband PPDR WAN, which will be investigated further. For PPDR WAN, WGFM decided that two candidate bands, 400 – 470 MHz and 694 – 790 MHz, should be investigated, along with unpaired 2 GHz.

The roadmap envisages that a subsequent report will address the possible harmonization options, supporting the implementation of the user requirements and spectrum needs. The second ECC report — and the last one preceding an ECC decision on broadband PPDR — is started and its framework defined. Finalization of the second ECC report is expected around the first quarter of 2014.

Narrowbanding Possibility

Concerning the 400 MHz range, the working group sent a revision of the ECC Decision (06)06 on narrowband digital professional mobile radio/public

access mobile radio (PMR/PAMR) to the CEPT public consultation. This revised decision includes for the first time an approach similar to the U.S. telecom regulator FCC's VHF and UHF narrowbanding mandate.

The FCC narrowbanding applies as of 1 January, 2013, in the United States, and requires new licenses and renewed licenses be issued only for equipment operating at 12.5-kilohertz efficiency or better. This means that 20

kilohertz, 25 kilohertz or even less spectrally efficient equipment cannot get new or renewed PMR licenses in the respective bands for mission-critical communications systems.

Under this approach, European regulatory authorities may consider identification of a minimum required spectral efficiency to support the migration to more spectrally efficient digital technology, which will allow the creation of additional channel



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An FM49 project team meeting in 2012.

capacity within the same radio spectrum and support more users. This is also an opportunity to upgrade radio systems and improve interoperability. The consideration is based on available

digital narrowband PMR/PAMR technologies such as TETRA, Digital Mobile Radio (DMR) and digital Professional Mobile Radio (dPMR) and the national needs.

The administration may choose to impose a minimum required spectral efficiency such as 6.25 kilohertz or 12.5 kilohertz. WGFM notes that the ETSI standardized digital PMR solutions, such as TETRA, DMR or dPMR, are considered as having 6.25-kilohertz spectral efficiency.

WGFM members say the experience with DMR suggests users could use the extra capacity to improve operations including adding data, mainly short messages, so the increased spectrum efficiency does not materialize in freeing spectrum in the crowded PMR bands in 406.1 – 470 MHz. In time, as more systems move to digital, the benefit is more likely to materialize. Narrowbanding could therefore become a tool for some European regulators to free spectrum for PPDR wide-area networks in the 400 MHz bands.

The investigations will also impact CEPT positions concerning WRC-15 Agenda Item 1.3, which has the objective to review and revise ITU-R Resolution 646 for PPDR. This is in accordance with ITU-R Resolution 648, which invites ITU-R to study technical and operational issues relating to broadband PPDR and to develop recommendations on technical requirements for PPDR services and applications, the evolution of broadband PPDR through advances in technology, and the needs of developing countries. ■

Author's Note: Peter Buttenschoen from the German Federal Ministry of Economics and Technology led the Project Team FM49 in CEPT/ECC. Alexander Gulyaev was the rapporteur for ECC Report 199. Both men were key to the development of ECC Report 199.

Thomas Weber joined the European Communications Office (ECO) in 2010 as expert for the Frequency Management Working Group (WGFM) and is chairman of the WGFM maintenance group on short-range devices (SRD/MG). He is also responsible for the frequency management project teams and correspondence groups in the WGFM dealing with spectrum monitoring, reconfigurable radio systems and licensed shared access, satellite services, GSM-R/PMR/PAMR issues, direct-air-to-ground communications, and the European Common Allocations Table. Contact Weber at thomas.weber@eco.cept.org.

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P25 for Medical Workers

Saudi Arabia's Ministry of Health selected a P25 network to capitalize on coverage and data features.

By Chris Leonard

As practicing Muslims know, the pillars of Islam are the five basic acts that are mandatory for all believers. These five pillars include profession of faith, prayer, social responsibility, month-long fasting during Ramadan and completing the pilgrimage to Mecca. These religious traditions are extremely important to many in Middle Eastern countries including the Kingdom of Saudi Arabia, not only because of the population's beliefs, but also because of the kingdom's role as host to the pilgrimage every year.

The pilgrimage to Mecca, also called Hajj, is one of the largest annually occurring pilgrimages in the world. All able-bodied Muslims are expected to complete this pilgrimage at least once in their lifetime. The pilgrimage occurs from the 8 – 12 Dhu al-Hijjah, which is the 12th and final month of the Islamic calendar that changes from year to year. Pilgrims join processions of hundreds of thousands of people, who simultaneously converge on Mecca for the week.

This means that every year authorities throughout the kingdom are tasked with preparing for millions of people to visit the country and take part in important religious gatherings and observances. With so many people in

one location, having a communications system that emergency personnel, such as EMS, can rely on is necessary.

Technology Considerations

Many European and Middle Eastern countries use TETRA technology for their communications needs. TETRA is an open standard developed by the European Telecommunications Standards Institute (ETSI) that allows independent manufacturers to develop infrastructure and terminal products that fully interoperate. In terms of technology, TETRA employs four-slot TDMA technology. While this communications standard-based solution provides a number of benefits, there are also disadvantages.

While the TETRA standard is efficient in covering urban areas characterized by high subscriber density, it is not always effective at covering larger, rural and mountainous areas because of the low power levels of TETRA portable and mobile radios. Addressing this issue requires the installation of a larger number of base station sites than required with other technologies, which can be costly, especially when densities are low.

Understanding both the benefits and disadvantages of a TETRA-based

system, the Kingdom of Saudi Arabia's Ministry of Health decided, under new leadership, to look at other options beyond that technology and implement a Project 25 (P25) technology standard radio network.

P25 Benefits

P25 technology has become the standard of choice for many communications systems in North and South America. Systems in use are continually undergoing compliance testing to ensure that all requirements are met and the latest advancements are being used. P25 is used by emergency workers as well as by the military to provide dependable connections. And while the technology has been adopted outside of the Americas, Saudi Arabia is on the forefront of those making the switch.

Saudi Arabia's geography provides a unique challenge for communications, primarily because it is dominated by the Arabian Desert, a vast expanse of very low population centers. There are virtually no rivers or lakes in the country, but valleys and riverbeds are numerous. In addition, the country boasts large plateaus and mountains.

While these geographic and demographic factors have caused radio

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communications challenges in the past, the P25 technology provides improved coverage in the country at less cost than TETRA technology could provide. Coverage for the system's western region was accomplished with about 20 sites, and the system is available to all medical service providers in the region. With the new P25 VHF system, EMS personnel experience secure and integrated voice and data communications that allow

them to coordinate emergency response across the country without interruption. With millions of people visiting the country each year for the pilgrimage to Mecca, having the ability to communicate across these geographic barriers is invaluable to the emergency responders.

In addition to the extensive coverage, the Ministry of Health also benefited from the new system's features, including the integrated GPS capabili-

ties. With this technology, EMS personnel using an AVL system have the ability to facilitate the arrival of ambulances and guide them along the shortest routes to hospitals or health centers. This can make all the difference when lives are at stake and there are tens of thousands of people in the streets during the religious events.

System Evolution

The Saudi Arabian Ministry of Health's mission is to deliver the best-quality integrated, comprehensive healthcare services to its people. Providing personnel with a new communications system has proven to be a significant step in the right direction.

The technology can be installed in phases over different budget years, without risking technology obsolescence. The system does not need to be replaced or upgraded all at once, but rather it can be gradually migrated. This feature gives agencies the ability to interoperate with other systems throughout the process and avoids taking the legacy system offline for any period of time. With P25, agencies from another geography on a different system can roam into a coverage area and still have the ability to communicate.

There are plans to expand the ministry's line of mobile and portable radios to meet the needs of the growing and evolving program. Coverage of critical population centers and transportation routes continues to expand as the system is rolled out to different parts of the kingdom. The system also was customized specifically to provide the greatest value to users, while ensuring reliable coverage now and for years to come. ■

Chris Leonard has more than 30 years experience in the wireless communications industry, as both a systems engineer and program manager. He is director of international programs for Harris Public Safety and Professional Communications (PSPC) in Lynchburg, Virginia, USA. Previously, he was director of international programs for Harris' tactical radio business. Email comments to editor@RRMediaGroup.com.

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Product Expo: Base Stations and Repeaters

Alligator Communications

The Alligator Model 1800 frequency synthesized, redundant base station/repeater is available in the 400 and 900 MHz and 1.4 GHz bands. The unique Common Time Base technology provides zero



frequency offset between four internal RF modules. One adjustment of the transmit frequency calibrates the entire unit, and downtime to perform tedious calibration of receivers is eliminated.

Built-in intelligence performs automatic checks of a warm standby transmit module and schedules rotation of the transmit modules. When any replacement module is installed, it automatically programs to the operating frequency. The unit features a built-in automatic answer device for dial-up diagnostics.

www.alligatorcom.com

Bird Technologies

The Signal Booster I series provides a balance of performance and value for extended coverage of radio communications networks,



Bird executives said. The Signal Booster II series is for public-safety-grade communications and reliability in disadvantaged RF locations for first responders, public-safety/governmental

agencies and private system users. The Signal Booster III series features an intuitive user interface that allows easy configuration for changing RF environments. The RescueLine Signal Booster fully complies with the International Fire Code (IFC) 2009 code.

www.birdrf.com

BridgeCom Systems

The BCR Repeater features 40 watts of UHF or 50 watts of VHF RF power. The dual fan-cooled unit can become a community repeater, a 16-channel base station, or manage a channel in a logic trunked radio (LTR) trunking system. The repeater includes



easy-to-use Windows-based programmer, remote programming and maintenance via DTMF, and built-in high-capacity tone panel that supports up to 64 users per channel.

The repeater is fully LTR compatible. Other features include reliable and fast sub-audible decoding and excellent receiver sensitivity of 0.25µV.

www.bridgecomsystems.com

Cassidian

Cassidian's mini TETRA base station TB3p is suited for establishing indoor radio coverage, for stand-alone use and for providing areas with temporary radio network coverage. The unit is about the size of a standard laptop PC, and one person can easily carry it to the site, install it and set it up. Once up and running, the device can be operated and maintained over a remote connection, eliminating costly site visits. The number one application for the device is for



indoor coverage in large public buildings, shopping centers or indoor car parks. The unit is also a cost-effective way to fill coverage gaps. It can be used as a stand-alone base station to

provide hot spot coverage in places that the network may not reach. The base station is easy to deploy for stand-alone or temporary coverage, Cassidian officials said.

www.cassidian.com

Codan Radio Communications

Codan Radio Communications designs and manufactures base stations and repeaters for analog and digital conventional/trunked LMR applications. The radio systems exceed industry standards



and are renowned for their low-power consumption, ruggedness and transportability, and surviving in harsh environments, Codan executives said. The base stations can be configured for a variety of applica-

tions, integrating with other vendor handheld or mobile radios in analog or Project 25 (P25) digital mode. The base stations operate in low band, VHF (AM or FM), UHF, T-band or 700/800/900 MHz frequency bands. The repeaters are available in analog or P25 digital configurations for either wideband or narrowband operation.

www.codanradio.com/lmr

Damm Cellular Systems

Damm TETRA base stations are optimized for maximum user friendliness. Outdoor base stations, BS421, can be installed with



up to four carriers at one site. The indoor base stations, BS41x, can be installed with up to 16 carriers. Designed for a fully distributed IP system, scalable from single to large multisite networks, the base stations come integrated with LogServer, dispatcher and network management, and with an

internal GPS receiver. The BS421 can be mounted directly in the mast, close to the antennas, providing full dual receive diversity for optimal sensitivity and offering a built-in duplex filter with an output power to the antenna of up to 10 watts.

www.damm.dk

EF Johnson Technologies

The ATLAS 4100 and 4200 (simulcast) multimode stations leverage a common hardware platform for multiple operating modes, including analog/Project 25 (P25) conventional and P25 trunked operation. The small two-rack unit (RU) footprint reduces rack space requirements, and the modular architecture allows flexible expansion of sites and seamless scalability of the system. The intuitive



configuration interface enables quick installation and flexible software upgrades. The low current consumption in transmit and receive modes results in reduced energy costs. New station

Base Stations and Repeaters

models are drop-in replacements for existing stations and do not impact systems operations. Stations come standard with an integrated voter comparator and simulcast manager for the 4200.

www.efjohnson.com

Fiplex Communications

Fiplex introduced a way to wirelessly link various bidirectional amplifier (BDA) repeaters with proprietary software



known as FOMS. The software, when combined with remote control cards inside each BDA, allows users to manage the repeaters via wireless links. The Windows-based utility allows real-time monitoring and operations of the BDA network for cellular, TETRA and public-safety 700/800 MHz. As an administrative application, FOMS allows for dynamic reconfigurations.

As an administrative application, FOMS allows for dynamic reconfigurations.

www.fiplex.com

Harris Public Safety and Professional Communications (PSPC)

The Momentum HDT300 is a Digital Mobile Radio (DMR) Tier 3 compliant trunking base station that provides two-slot TDMA digital signaling. The system enhances mission-critical communications capabilities by economically delivering services such as mobility management, voice calls, data services and interoperability. The unit operates in the VHF, UHF, 800 MHz and 900 MHz LMR



licensed frequency bands and provides 6.25-kilohertz spectrum efficiency while operating on 12.5-kilohertz channels. With Tier 3 compliance, the unit offers flexibility over the lifetime of the system because the device is interoperable with other manufacturers' equipment.

www.pspc.harris.com

Icom

Icom's IC-FR9010/FR9020 is a high-power (110 watt/100 watt) full-duty VHF/UHF Project 25 (P25) digital repeater/base station. The unit can be programmed with P25 conventional and analog FM mode per channel. The mixed-mode operation allows users to



receive both digital P25 and analog FM modes and to transmit either mode depending on the received signal. The base station features a

large LCD display, 16 key buttons and 500 memory channel capability, as well as features, specifications, performance and reliability for mission-critical communications, Icom officials said.

www.icom.co.jp/world

Kenwood

Kenwood continues to evolve its core NXR-700/800/900 and NXR-710/810 NEXEDGE series repeater/base stations. Newly



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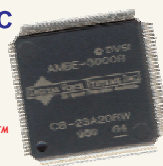
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developed NXR-x00 series firmware adds a conventional IP interface for use by Kenwood Solution Developers to offer new dispatch and radio messaging solutions. Both series repeater/base stations



support IP connection and analog/digital dual-mode operation. The NXR-x00 series (available in VHF/UHF/800 MHz) is designed

as a systems product for use in single-site to large multisite trunked radio systems. The cost-effective NXR-x10 series (available in VHF/UHF) products are aimed at non-trunked, conventional, single or multisite systems.

www.kenwood.com

Midian Electronics

The PR-10 simplex repeater maker with selective repeat records up to 3 minutes of incoming voice and paging tones and then regenerates them into dead spots.



The unit also features a tone decoder to only retransmit validated pages (DTMF, two tone, five tone or pulse tone) for applications such as fire

departments retransmitting two-tone pages into remote areas with poor radio coverage. The unit can expand coverage into buildings, basements and mountainous areas. Preconfigured cables for some radios are available.

www.midians.com

Midland Radio

Midland's Project 25 (P25) base stations/repeaters are 100 percent continuous duty (up to 110 watts transmit output power), providing a remote site operation reliability rate greater than 0.991



percent, company officials said. The stations are programmable by channel for digital, conventional modulation or mix mode and are programmable by channel for base station or repeater operation. The low standby current draw feature extends operation of battery and/or solar-powered equipment, reducing service and maintenance issues — VHF 120 milliampere (mA); UHF 160 mA.

Options include digital Fixed Station Interface (FSI), channel steering and remote site monitoring. IP and tone remote interfaces are available. All Base Tech radios (P25 and analog) offer a five-year warranty.

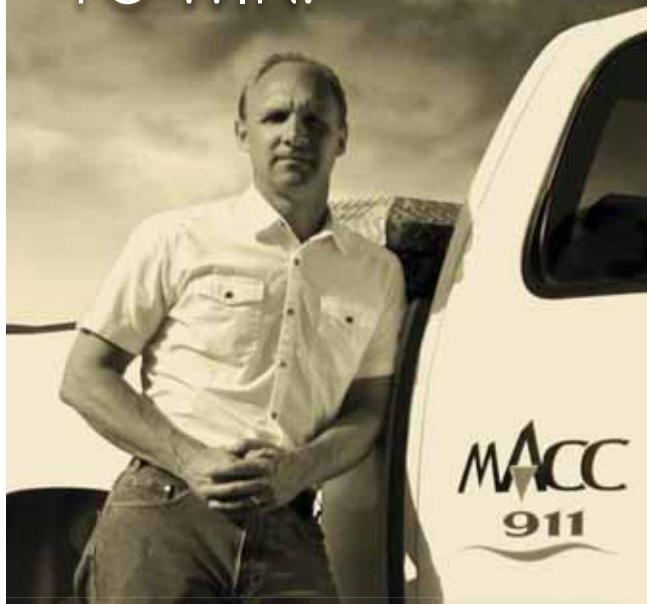
www.midlandradio.com

Motorola Solutions



The reliability and serviceability of the full-featured ASTRO 25 systems make it ideal for mission-critical systems. The product allows users to meet demand for IP networks and narrowband radio operations with the high-performance GTR 8000 base radio/expandable site subsystem. The GTR 8000 offers software-based upgrades and migrations, no single point of failure, hot swap hardware, front access

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Dean Hane, Radio Communications Manager, MACC 9-1-1, Grant County.

The MACC (Multi Agency Communications Center) in Grant County, Washington provides fully interoperable P25 digital communications to more than 1,000 Public Safety professionals, from 33 agencies, across 3,000 square miles of terrain.

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Base Stations and Repeaters

serviceability and integrated battery charging. The compact design enables everything from analog conventional to advanced Project 25 (P25) TDMA trunking on the same hardware.

www.motorolasolutions.com

Royal Communications International

The Micom RM125 1.6 – 30 MHz HF-SSB radio is designed to provide long-range radio communications for fixed or mobile base stations without infrastructure. The unit comes with a 125-watt



amplifier in a 19-inch rack mount configuration. The radio features a detachable control head, extension cable, auto-sensing 110/220 VAC power supply, cooling fans and a multiple accessory interface junction box. The Micom radio meets and exceeds

National Telecommunications and Information Administration (NTIA) standards and is certified for compliance with military standards. The unit has calculated more than 33,000 hours mean time between failure (MTBF) and is software defined, allowing users to upgrade radios as standards evolve.

www.royal-communications.com

Schnoor Industrieelektronik

Schnoor TETRA TMO repeaters offer coverage solutions for mission-critical TETRA networks. The repeater is designed to



extend radio coverage in TETRA public-safety networks and is intended to be used outdoors, in buildings and in tunnels. The repeater is shipped within a cabinet, which contains necessary RF-coupler to connect to the antenna system. A power supply with battery backup assures functionality if the external power system fails. In-building coverage is provided by a customer-specific designed antenna system with radiation cables or antennas with digital signal processor (DSP) technology, and band or channel selective solutions can be provided.

www.schnoor-ins.com

Sonik Messaging Systems

The PTX-150 all-digital paging transmitter is unlike other paging transmitters that are modified conventional analog transmitters limited to two-level-only POCSAG paging, company officials said. The unit is available with a 100-watt or 250-watt internal power amplifier (PA) and an optional internal isolator. The unit handles



the entire VHF spectrum from 138 – 174 MHz, is designed for continuous duty applications, handles all digital paging protocols “on the fly” and includes Windows-based diag-

nostics software. This transmitter is designed for 19-inch rack

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www.LMRsystems.com



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mounting and includes a 5- or 10-megahertz reference input.

www.sonik.com

Spectra Engineering

The MX800 repeater/base station offers extended capabilities with the availability of transmitter power up to 110 watts and frequencies as high as 900 MHz. The RF output power can be increased



up to 300 watts with the addition of the MXPA300, an external stand-alone amplifier. The MXPA300 offers a power control loop and built-in remote diagnostics. Advanced

VSWR protection circuits can shut

the amplifier down in several microseconds to prevent damage. The unit can also be optioned for increased sensitivity to -124 dBm (0.15 μ V) to provide similar range-extending improvements in the receiver.

www.spectraeng.com.au

Tait Communications

The Tait TB9400 is built on the Tait TB9100 pedigree and provides performance and reliability for organizations around the world. The unit delivers on cost-effective deployment and operational efficiency with Phase 2 upgradability for spectral efficiency, Linear Simulcast Modulation (LSM) for greater coverage and



remote network management for effective operations. For efficient network management, the device features remote management and monitoring options including

inbuilt diagnostics and access level control, multiple user accounts, remote fault diagnosis and detailed alarm monitoring and management via IP.

www.taitradio.com

Teltronic

Nebula, Teltronic's TETRA infrastructure, provides coverage, security and reliability in a platform designed for efficient implementation and cost-effective scalability. The system is 100 percent IP, allowing a secure and reliable network with distributed switching, distributed intelligence and complete fault-tolerant redundancy. With 75 watts of RF output power from each repeater and triple receiver diversity, the system is loaded with advanced capabilities such as multislot packet data up to 28.8 kilobits per second (kbps), simultaneous voice and data, FIPS Level 3-oriented E2EE management, real-time statistics of network performance, and off-the-shelf solutions optimized for AVL,



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Base Stations and Repeaters

telemetry and transportation. The hardware is ready for migration to TETRA Enhanced Data Service (TEDS).

www.teltronic.es

Vertex Standard

The eVerge EVX-R70 conventional repeater operates in analog and digital modes and can be used with any existing analog two-way radios. The repeater includes mixed mode to dynamically



switch between analog and digital for flexible support. Built to the TDMA protocol, the unit is compliant to the Digital Mobile Radio (DMR) Tier 2 standard. Other features include

AMBE+2 digital vocoder, 100 percent continuous duty at 45-watt VHF and 40-watt UHF, support for 16 channels and groups, is rack mount size and includes integrated power supply with connector for optional external DC battery backup. LED indicator enables easy monitoring of repeater status.

www.vertexstandard.com

Westel Wireless Systems

The TRS-25 multi-repeater package provides up to three full-duplex Project 25 (P25) or analog repeaters or base stations in a single 19-inch chassis. The three radios can operate independently or be



set to a link-repeater-link configuration for remote areas, highway and pipeline scenarios. VHF/UHF cross-band and analog/P25 digital cross-mode configurations are supported with 12 kilobits

per second (kbps) CVSD for legacy users. The device also provides inbuilt P25 vocoding, direct connection to 4-watt lines and data encryption standard – output feedback (DES-OFB) encryption and can be connected to tone-based console systems. The device supports Westel's existing VoIP and Web-based diagnostics and can be software upgraded to support P25 trunking.

www.westelwireless.com

Wireless Pacific

The RDX Pico is a small, self-contained Project 25 (P25) suitcase repeater designed to allow instant deployment in most radio environments. The unit allows six configurations and now features



MERLAN P25 to instantly deploy IP connected end-to-end encrypted multisite networks anywhere. The 8.5-ampere hour (AH) inbuilt battery management system provides more than 12 hours of operation at 10 percent duty cycle and can be recharged by any available 8 –

30 VDC power source or AC power. RF output power is set to 5 watts to ensure balanced talk-in/talk-out to field portable units. The unit weighs 4.5 kilograms and delivers P25 – analog repeater performance with global Internet connectivity from any LAN, Wi-Fi or 3G network.

www.wirelesscorppltd.com

TETRA and Tetrapol Radios

Cassidian Communications launched an 800 MHz version of the TH1n slimline



TETRA radio. The pocket-sized radio allows data sharing in the field, as well as data query and reporting functions. The radio is ideal for health care personnel and other users who wish to join shared public-safety networks without using heavy-duty radios targeted at first responders. The radio is also suitable for covert use.



Cassidian's TPH900 is a Tetrapol radio for mission-critical voice and data communications. The radio features a compact design and large keys. Integrated

GPS allows the radio to transmit its location automatically or upon request through a dedicated key. A man-down alarm automatically activates an emergency call with optional GPS coordinates. Embedded Bluetooth 2.1 eliminates wires, and a vibrating alert provides discreet notification of calls or messages.

www.cassidian.com

TETRA and LTE Base Station

The MTS4L from **Motorola Solutions** is a dual-technology base station that combines

TETRA technology with a Long Term Evolution (LTE) eNodeB in the same cabinet. The product can be deployed as a TETRA-only base station with services required for eNodeB, including shared backhaul, common power supply and battery backup, allowing a staged migration to a unified TETRA and LTE network. The product also supports TETRA Enhanced Digital Service (TEDS) and Multi-Slot Packet Data (MSPD) for enhanced data services.

Motorola also introduced the AME 2000 Secure Mobile Solution that provides secure voice and data communications on wireless networks. The product is based on Motorola's Assured Mobile Environment (AME) solution, which combines a commercial off-the-shelf (COTS) device with hardware and software to provide end-to-end encrypted voice and data communications on private or public wireless networks. The system features a smartphone with Android-based operating system.

www.motorolasolutions.com

TETRA Broadband System

Hytera Mobilfunk outlined its vision for the integration of Long Term Evolution (LTE) and TETRA technology to accommodate high-definition video and other broadband data applications. The company currently adapts LTE for use in private mobile radio (PMR) networks using an LTE eNodeB, a TETRA base station and an ACCESSNET-T IP core.

The system provides PMR services to smartphone-based LTE terminals and TETRA handheld radios. LTE is planned for pure data-centric applications, but PMR voice services can also be provided over LTE. Group calls with priorities, text messaging and video over LTE (VoLTE) also are supported.

www.hytera.de

Covert Communications System

OnGuard V from **Imtradex** is a covert communications system for law enforcement and security applications.



The small, interference-free system includes an in-ear receiver and can operate with analog and

digital two-way radios. A sensitive, miniature microphone with discreet fastening is included. The hand send button and rubber housing are made of beige material.

www.imtradex.com

Amplified Audio System

Peiker France introduced an audio amplifier



for the TPH700 car cradle that is easy to install and compatible with car and truck batteries. The product features a loudspeaker

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www.peiker.fr

TEDS Test Option

Aeroflex released a TETRA Enhanced Data Service (TEDS) option for the 3920 digital



and analog radio test set. Technicians can verify the operation of TEDS mobile stations

and base stations. Also included is the ability to test RF performance of the transmitter and receiver of TEDS-capable radios. This option implements the testing of TEDS using TETRA T4 test mode, which measures the transmitter peak and root mean square (RMS) error vector magnitude, as well as the in-phase quadrature (IQ) imbalance. RF power and frequency error of the TEDS radio can also be measured.

www.aeroflex.com

TETRA Spectrum Analyzer

Axell Wireless introduced a spectrum analyzer for TETRA networks. The fully integrated analyzer provides a view of parameters



such as bandwidth, frequency range and power, allowing for remote controlled network optimization through a simple user

interface. The company also announced enhancements to its multiband digital repeaters and Fibre Distributed Antenna Systems (FibreDAS), adding the ability to deliver mixed 2G, 3G and Long Term Evolution (LTE) services.

www.axellwireless.com

Train Video Surveillance

RADWIN introduced Wireless Broadband in Motion geared for online video surveillance onboard trains. The system increases situational awareness by transmitting high-definition video in real time from closed circuit television (CCTV) cameras on trains to a control center while the train is in motion. Base stations are deployed along the railway, and underground tracks communicate with mobile units installed on trains. Capacity

of between 50 and 100 Megabits per second (Mbps) is possible for trains traveling up to about 200 kilometers per hour (kph).

www.radwin.com

GSM-R Interference Filter

The PRO-DDPF GSM-R from **Procom** is a dual duplex protection filter designed to address public mobile signals interfering with rail communications and traffic management systems. The filter attenuates the interference from public mobile networks and reduces the blocking problems to non-critical levels. Ceramic technology allows for low insertion loss and a high level of rejection close to the pass band. The product also provides good rejection of out-of-band spurious signals.

Procom also added a TETRA combiner and mini duplexer to its product line. The PHY-TETRA-2-FME is a combiner for cou-



pling two TETRA mobile transceivers on one common antenna. High isolation of up to 60 decibels (dB) is possible.



The combiner comes in models covering either the 380 – 410 MHz or 400 – 430 MHz bands. The MPX 70/44-TETRA N mini

duplexer uses high-Q temperature compensated helical resonators to meet the demand for a compact filter. The housing is made of extruded aluminum, with the chassis constructed of steel and a Teflon insulation applied to the rigid coaxial cables and connectors. A black vinyl coating prevents corrosion. The duplexer comes in three models covering the 380 – 395 MHz transmit (TX) and 405 – 430 MHz receive (RX) bands.

www.procomuk.co.uk

Tap-Proof Smartphone

The HIGHSEC smartphone from **Giesecke & Devrient (G&D)** allows end-to-end encryption of voice data transmitted between HIGHSEC phones and prevents unauthorized third parties from listening in on calls. Text messages can be transmitted in secure mode. The phone runs a secure



version of the Android operating system that meets government security requirements. The secure telephony and text messaging functions are activated via a separate application, but the phone

also can operate as a normal smartphone. When the application is launched, the user is prompted to enter a personal identification number (PIN) to access a secure MicroSD card integrated in the phone. The card contains the keys needed for subscriber authentication and encryption/decryption algorithms. The phone also includes a separate, secure phone directory, and secure voice calls are only permitted between members of a predefined user group. Calls are routed over an encrypted VoIP connection.

www.gi-de.com

Quadrature Modulator

The CMX972 from **CML Microcircuits** is a quadrature modulator/demodulator featuring a low-power intermediate frequency (IF) and RF quadrature demodulator with phase-locked loop/voltage-controlled oscillator (PLL/VCO), a wide operating frequency range and optimized power consumption. The demodulator is suitable for superheterodyne architectures with IF frequencies up to 300 MHz, and the device may be used in low IF systems or in systems converting down to baseband. The product is controlled by serial bus. The device features a small, RF-optimized 32-pin very thin quad flat no-lead (VQFN) package and minimal external components, making it ideal for space-constrained applications.

www.cmlmicro.com

Cable Prep Tool

Times Microwave Systems introduced the ST-1200-CH cable prep tool for LMR-1200-DB cable. The tool is designed to simplify the termination process of new two-piece LMR-1200 connectors and can be used with any older LMR-1200-DB connector designs. A special blade creates a beveled cut on the outer cable jacket to help center the back end of the connector over the cable during the connector attachment process and allows the weather-

tight O-ring in the connector back nut to slide more easily over the cable jacket.

www.timesmicrowave.com

Talking TETRA Modem

The TMO-100 from **Funk-Electronic Picior-gros** is a TETRA data modem that transmits pre-recorded spoken voice messages to a



single Inter Subsystem Interface (ISSI) or to groups. The modem responds to events with

digital or analog inputs, including alarms, pressure, voltage, power down and received signal strength indication (RSSI) level. The device can speak numbers, days of the week or month, and other parameters. All supervisory control and data acquisition (SCADA) and telemetry features are also available.

www.tetramodem.com

Radio Planning Software Advanced Topographic Development

and Images (ATDI) launched ICS designer, radio-planning software that supports a variety of networks including mobile, broadcast, fixed, microwave, satellite, radar, point-to-multipoint and aeronautical. The software provides coexistence studies between different technologies. Multi-resolution maps, including rasters 2D and 3D and vectors, as well as multiple databases are supported. A license for the software includes technical support, maintenance, training and access to mapping and other modules.

www.atdi.com

Green Symmetrical Attenuators

Spinner developed an environmentally friendly line of symmetrical attenuators for the 25- to 200-watt output range. The attenuators include an aluminium nitride (AlN) ceramic material used as the medium substrate. The ceramic is environmentally friendly to manufacture, process and dispose. The line also uses identical parts

throughout the series to guarantee quick availability over all power ratings and attenuation classes. Standard connectors are N male/female and 7-16 male/female. The attenuators are available in 25-, 50-, 100- and 200-watt power ratings and are supplied with attenuation values of 3, 6, 10, 20, 30 and 40 decibels (dB). Bands from DC to 4 GHz, with an option to 6 GHz, are supported.

www.spinner-group.com

In-Building Antenna

The CMWB2-038-6-NJ ceiling-mount antenna from **Panorama Antennas** supports multiservice and multioperator wideband wireless coverage. The omnidirectional antenna covers frequencies from 380 MHz to 6 GHz, including UHF TETRA, LTE 700 MHz, cellular, WLAN and Wi-Fi. The antenna provides simultaneous in-building connectivity for employees, consumers and first responders, and features passive intermodulation (PIM) technology.

www.panorama-antennas.com

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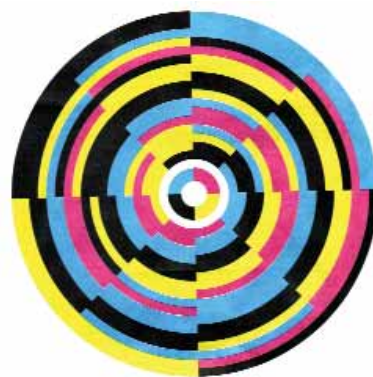


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18 – 20 August: INTERSEG: International Law Enforcement Technology, Services and Product Expo, Rio de Janeiro. International Association of Chiefs of Police (IACP): www.feirainterseg.com.br/en

18 – 21 August: APCO Conference and Exposition, Anaheim, California, United States. Association of Public-Safety Communications Officials (APCO) International: www.apco2013.org

10 – 13 September: Eighth Metro World Summit, Shanghai. China Decision Makers Consultancy (CDMC): www.cdmc.org.cn/mws

11 – 12 September: Wireless China Industry Summit 2013, Beijing. Infoex: www.wirelesschina-summit.com

15 – 17 September: Critical Communications Middle East, Dubai, United Arab Emirates. TETRA + Critical Communications Association (TCCA) and IIR: www.tandcca.com

18 – 19 September: LTE Asia 2013, Suntec, Singapore. Informa Telecoms & Media: <http://asia.lteconference.com>

18 – 20 September: VSAT 2013,

Amsterdam. Informa Telecoms & Media: <http://vsatevent.com>

25 – 26 September: Emergency Services Show, Birmingham, United Kingdom. Broden Media: www.emergencyuk.com

9 – 11 October: Professional LTE, London. IIR Telecoms & Technology: <http://professional-lte.com>

23 – 24 October: Critical Communications Expo, Hamburg, Germany. Exhibition & Marketing Wehrstedt: www.ccexpo.de

23 – 25 October: EUTC 2013, Amsterdam. European Utilities Telecom Council (EUTC): www.eutc2013.utc.org

29 October: TETRA in Taiwan, Taipei, Taiwan. TETRA + Critical Communications Association (TCCA): www.tandcca.com

31 October: TETRA in the Philippines, Manila, Philippines. TETRA + Critical Communications Association (TCCA): www.tandcca.com

5 – 7 November: CBTC World Congress, London. Global Transport Forum: www.cbtcworldcongress.com

13 – 14 November: Transport Security Expo, London. Nineteen Events: www.transec.com

19 – 21 November: Railway Telecommunications, Amsterdam. Global Transport Forum: www.railway-telecoms.com

19 – 22 November: ITU Telecom World, Bangkok. International Telecommunication Union (ITU): <http://world2013.itu.int>

20 – 22 November: Comms Connect, Melbourne, Australia. Westwick-Farrow: <http://comms-connect.com.au>

26 – 28 November: PMRExpo 2013, Cologne, Germany. EW Medien und Kongresse: www.pmrexpo.de/pmrexpo-home

9 – 11 December: Control Room Communications, Vienna. TETRA + Critical Communications Association (TCCA) and IIR: www.tandcca.com

24 – 28 March 2014: International Wireless Communications Expo (IWCE), Las Vegas, United States. Penton Business Media: www.iwceexpo.com/iwce2014



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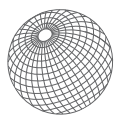
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2. Which of the following best describes your organization?

- ☐ A Mobile Communications Dealer/Reseller
☐ B Distributor, Agent, Importer, Exporter, Rep
☐ C Commercial Trunked Radio and Other Wireless Service Providers
☐ D Government/Public Safety/Military
☐ E Business/Industrial/Transportation User
☐ F Communications Manufacturer/OEM/Software Developer
☐ G Engineering and Consulting Firm
☐ Z Other—please specify _____

3. What is your function?

- ☐ A Corporate/Senior Management
☐ B Operations/Administration Management
☐ C Technical/Engineering Management
☐ D Sales/Marketing
☐ Z Others Allied to the Field—please specify _____

4. Do you recommend, specify or purchase mobile communications equipment or services?

- ☐ A Yes ☐ B No

5. Is there any servicing of mobile communications equipment at your location?

- ☐ A Yes ☐ B No

6. In what areas of the world do you do business? (mark all that apply)

- ☐ A Western Europe ☐ E Australia/New Zealand
☐ B Eastern Europe ☐ F Africa
☐ C Middle East ☐ G Mexico/Central and South America
☐ D Asia ☐ H United States/Canada

7. What wireless technologies does your organization plan to use/buy over the next 2 years? (check all that apply)

- ☐ A Conventional Two-Way ☐ H Location Technologies
☐ B Cellular/Personal Communications ☐ I Tone Signaling (ANI, Encryption, etc.)
☐ C Paging/Messaging ☐ J Interconnect
☐ D Mobile Data ☐ K Satellite
☐ E SCADA/Telemetry ☐ L CAD
☐ F Microwave radio ☐ M Wireless Broadband
☐ G Trunking ☐ Z Other _____

Can Commercial Services Handle Public-Safety Broadband?

The debate surrounding whether a commercial network can sufficiently serve public-safety officials' broadband needs compared with a dedicated public-safety broadband network was front and center during the Critical Communications World (CCW) conference in Paris in May.

When asked by Jan Biemolt, program manager, Vts Netherlands Police, if Vodafone's commercial network could adequately handle public safety's broadband needs, a Vodafone executive said yes.

"The U.K. can't afford its own dedicated network," said Simon Holmyard, head of public services network strategy for Vodafone. "That's why all the operators in the U.K. are working with the government to understand the requirements, and when we roll out our new network in 2015, all the public-safety services will be on there."

Most public-safety officials disagreed with Holmyard. "We were a user of other providers' networks for many years," said Brigidier Ali Henzab, director of the telecoms department, Qatar Ministry of Interior (MOI). "To do our job, we need to have our own system because of resiliency and redundancy. Commercial Long Term Evolution (LTE) won't do the job. That's why we decided to have our own public-safety LTE, and it's launched and it's operational, but it still needs enhancements."

Although most participants said mission-critical data should not run over commercial networks, they agreed collaboration with commercial providers is essential. "Commercial partners have been at our side from the beginning," said Todd Early, deputy assistant director, Public Safety Communications Bureau for the Texas Department of Public Safety. "If they

are in the area, officers have chipsets for Verizon, the commercial carrier, so they have roaming with a virtual private network (VPN) tunnel. So you can go out of network and still have connectivity."

Harris County, Texas, USA, launched a 14-site public-safety LTE network in 2012. The county eventually plans to have 90 sites, Early said.

Because of the lack of dedicated public-safety broadband spectrum in Europe, Christian Mouraux, head of product management, ASTRID, is moving forward with a commercial mobile virtual network operator (MVNO) service offering for its 40,000 Belgian public-safety users.

"To do our job, we need to have our own system because of resiliency and redundancy. That's why we decided to have our own public-safety LTE, and it's launched and it's operational, but it still needs enhancements."

— Brigidier Ali Henzab, Qatar Ministry of Interior

"In the short term, there is no other solution," said Mouraux. "Even in the long term, we must meet the demanding requirements of the users. We have to look at what's available and use it."

Public-safety officials agreed that for users, the service is key, not the underlying technology or network. "From the user point of view, don't talk to me about technology, just availability and redundancy and applications," Mouraux said. "It's up to the operator to do what they need to do to achieve that."

"It's all about the service for the end user," said Vts Netherlands Police' Biemolt.

Vodafone's Holmyard said providing priority access to public safety is

possible on commercial networks. "If we know we have the users, they get priority on the network," he said. "We know who you are and where you are. We also share infrastructure with other operators and in-country roaming."

Matt Child, CEO of Solaris Mobile, said his firm's commercial service with spectrum in the 2 GHz band for mobile satellite services (MSS) "is harmonized and fully coordinated and unencumbered."

"It's the perfect solution for the emergency services sector; regulators had emergency services in mind when they allocated the spectrum," Child said.

The service relies on satellite

service but could work in tandem with terrestrial-based public-safety and commercial networks to provide public-safety services, Child said.

"We are a commercial operator, and we are seeking a return on investment, but if we can pull together on this, we could have a European public protection disaster relief (PPDR) harmonized network," Child said.

"We need dedicated spectrum to be accessed anytime and anywhere," said Emmanuelle Villebrun, co-chair of the Critical Communications Broadband Group (CCBG), part of the TETRA + Critical Communications Association (TCCA). "We will need the same for our broadband networks. Who owns the network is still a question." ■

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