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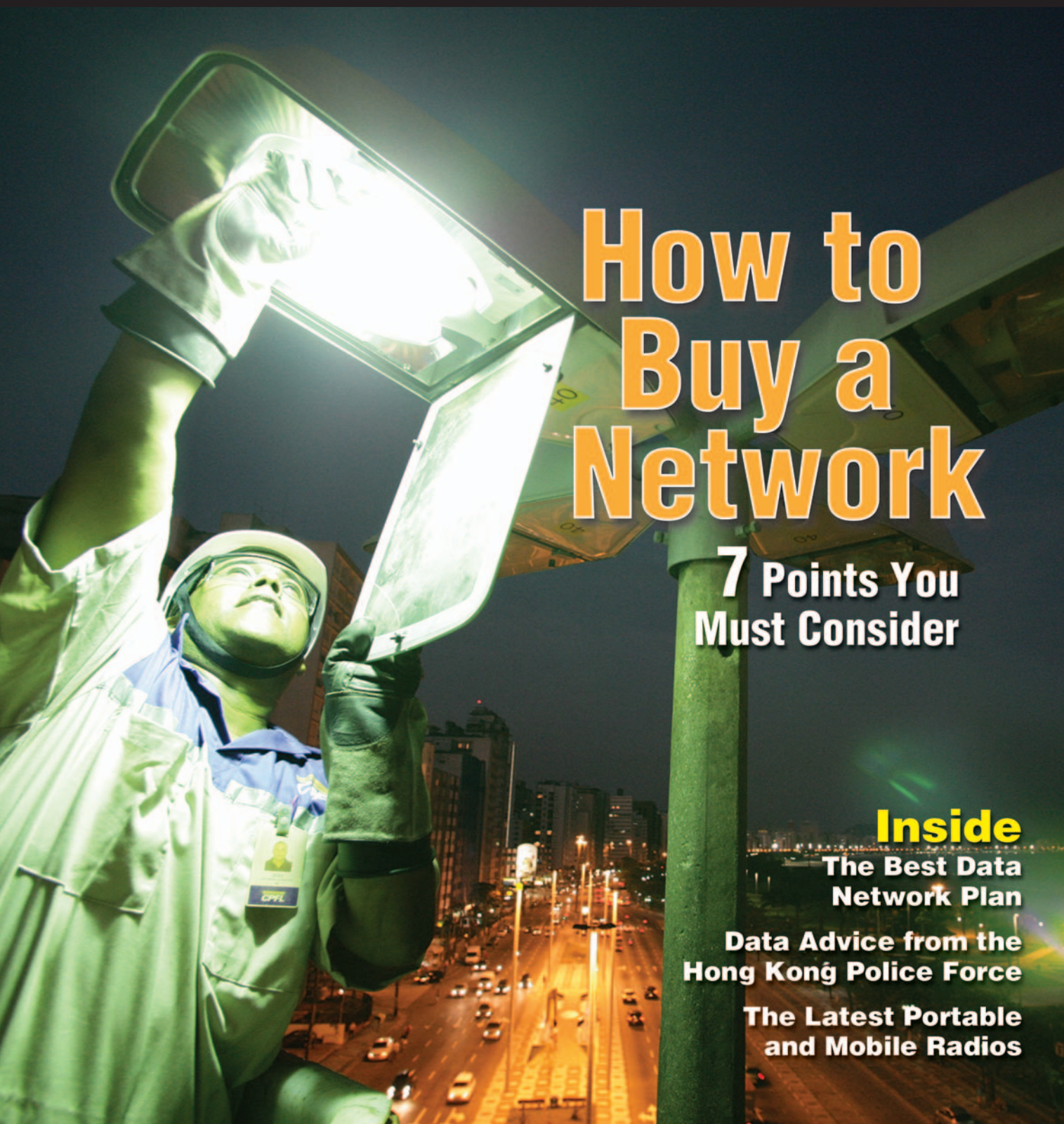

How to Buy a Network

7 Points You Must Consider

Inside

The Best Data Network Plan

Data Advice from the Hong Kong Police Force

The Latest Portable and Mobile Radios

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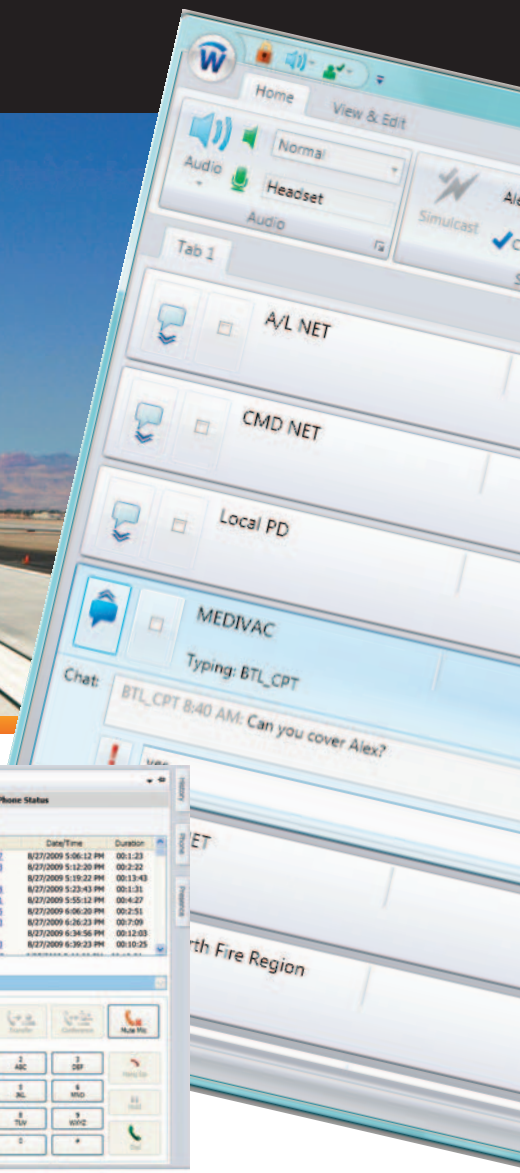

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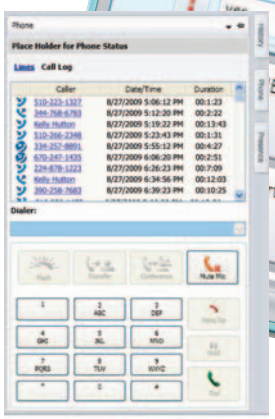

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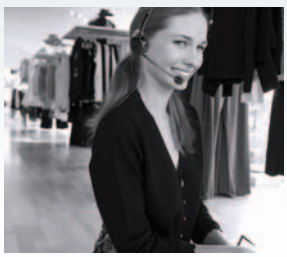

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RadioResource INTERNATIONAL

Quarter 4 2009

CONTENTS

Vol. 23, No. 5

Cover photo courtesy Motorola

20 How to Buy a Network
Communications is critical, particulary for a power plant or refinery. Here are seven points to consider before you buy your next communications system. *By Ricardo Bovo*

34 The Best Data Network Plan
Planning can help you combine technologies for mobile access, remote monitoring and other applications in one effective system. *By Jim Gardner*

40 Hong Kong Presents Data Tutorial
Mainland China learns about the Hong Kong Police Force's mission-critical communications systems and future plans. *By Jolly Wong*

How to contact us: www.RRMediaGroup.com or

Editorial	Sales	Subscriptions
edit@RRMediaGroup.com	info@RRMediaGroup.com	lfriday@RRMediaGroup.com
Phone: +1 303 792 2390 ext. 20	Phone: +1 303 792 2390 ext. 10	Phone: +1 303 792 2390 ext. 15
Fax: +1 303 792 2391	Fax: +1 303 792 2391	Fax: +1 303 792 2391

IN EVERY ISSUE

Dispatch 6
Reader survey finds users moving to digital systems.
By Sandra Wendelken

World News 8

Product Expo: Mobile and Portable Radios 42

New Products 46

Events 49

Global Forum: Eastern Europe 54
New network helps Hungary take on Schengen duties. *By Béla Kozma*

READER SERVICES

Classifieds 50
Advertiser Index 53
Subscription Form 53

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Survey Highlights Digital Use

Our staff recently surveyed you — the readers of this magazine — to determine the types of technologies you use and what technologies you plan to use in the future. The majority of you use analog conventional mobile communications networks, with digital trunked and conventional networks also used by a large number of readers.

Of those digital network users, the majority uses TETRA technology, although Digital Mobile Radio (DMR) systems also ranked high on the list of digital technologies used. In addition, digital Private Mobile Radio (dPMR) and Project 25 (P25) finished strong on the list of digital options.

Analog networks are still important among our readers, but a majority who don't use digital technology plan to migrate to digital networks within one to two years, so a digital transition is under way in nearly every region of the world.

Looking ahead to 2010, we will continue to cover trunked and conventional radio. Mobile data, along with interoperability, broadband, and VoIP and radio over IP (RoIP) will also continue to be hot topics. We'll also focus on digital standards, coverage and disaster management. We'll highlight mobile communications use in several vertical industries, including transportation, oil and gas, and utility, as well as in homeland-security applications. Of course, we'll cover public-safety and security communications issues in each publication next year.

We're also committed to bringing you the latest industry news on all these topics and more. I hope you are receiving our new monthly e-mail WORLD NEWS. It delivers the latest industry news and information from around the globe. You can get a sampling of our coverage in this issue's "World News" on Page 8. But you'll get more comprehensive and timely coverage through our Web site and WORLD NEWS e-mail. If you're not receiving the e-mail, just register on our Web site at RRImag.com.

We value your opinions! Please e-mail your feedback to me at swendelken@RRMediaGroup.com.

If you have story ideas or suggestions for coverage, we welcome your feedback. Please send me an e-mail or call me directly.

Sandra Wendelken, Editor
swendelken@RRMediaGroup.com

RadioResource INTERNATIONAL

RadioResource International delivers wireless voice and data 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 commercial and private 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.

PUBLISHER/EDITORIAL DIRECTOR
Paulla A. Nelson-Shira, pnelson-shira@RRMediaGroup.com

EDITOR
Sandra Wendelken, swendelken@RRMediaGroup.com

MANAGING EDITOR
Lindsay A. Gross, lgross@RRMediaGroup.com

ASSISTANT/WEB EDITOR
Michelle Zilis, mzilis@RRMediaGroup.com

WEB SITE ADMINISTRATOR
Lola Friday, lfriday@RRMediaGroup.com

GRAPHIC DESIGNER
Brad Hamilton, bhamilton@RRMediaGroup.com

EDITORIAL ADVISORY BOARD
Ole Arrhenius: Senior System Marketing Manager, EADS Secure Networks, Helsinki, Finland

Carlos Chajin: Business Development Manager, Latin America, Team Simoco

Peter Clemons: Director of Communications, Teltronic, Zaragoza, Spain

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Max Zerbst: Senior Consultant, Datasel Consulting, Springe, Germany

VICE PRESIDENT
Mark E. Shira, +1 303 792 2390 x11, mshira@RRMediaGroup.com

ACCOUNT EXECUTIVE
Jeff Peck, +1 303 792 2390 x12, jpeck@RRMediaGroup.com

CLASSIFIED ACCOUNT EXECUTIVE
Debra Sabin, +1 303 792 2390 x13, dsabin@RRMediaGroup.com

CIRCULATION MANAGER
Lola Friday, lfriday@RRMediaGroup.com

PRODUCTION MANAGER
Michael Portaro, mportaro@RRMediaGroup.com

EXECUTIVE ASSISTANT
Melissa Richey, mrichey@RRMediaGroup.com

ADMINISTRATIVE ASSISTANT
Sharon Knell, sknell@RRMediaGroup.com

CORRESPONDENCE
Editorial, advertising, and circulation correspondence should be addressed to: ***RadioResource International,*** 7108 S. Alton Way, Bldg. H, Centennial, CO 80112-9977, USA Tel: +1 303 792 2390, Fax: +1 303 792 2391.
Editorial e-mail: edit@RRMediaGroup.com
Advertising e-mail: info@RRMediaGroup.com

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INTERNATIONAL

LAS VEGAS, USA — Several companies announced Project 25 (P25) product developments at the Association of Public-Safety Communications Officials (APCO) International annual conference in August.

PowerTrunk, the Spanish company that last year entered the P25 market, announced a P25 Inter-RF Subsystem Interface (ISSI) software upgrade to its PowerTrunk25 infrastructure. The upgrade will allow users to maintain network connections when roaming onto other P25 systems. The end-to-end Ethernet IP architecture doesn't require conversion or transcoding, and agencies don't have to purchase or install the ISSI gateways required by non-Ethernet IP networks, company officials said.

The ISSI Test Tool (ITT) developed by the U.S. federal Public Safety Communications Research (PSCR) program was used to monitor a demonstration of the ISSI upgrade. ITT allows public-safety users to ensure that systems they purchase satisfy the applicable standards developed for ISSI.

EF Johnson Technologies introduced a P25-compliant wide-area conventional infrastructure system to allow first responders to roam between trunked and conventional systems.

Raytheon also demonstrated the integration of its P25 technology using the P25 ISSI protocol. Leveraging the ISSI protocol, voice logging and console functionality was integrated into Raytheon's P25net radio system during the conference.

Motorola launched its SmartX migration solution that allows for the gradual transition from an existing SmartZone system to an ASTRO 25 voice and data network.

DERBY, United Kingdom — **Team Simoco** acquired Australian company **ComGroup** to further strengthen its position in the global private mobile radio market and to drive continued growth. The value of the acquisition was £6.9 million (US$11.1 million).

ComGroup is the designer and distributor of Simoco-branded professional mobile radio (PMR) terminals and merged with the existing operations of Simoco. Located in Melbourne, Australia, and Andover, United Kingdom, ComGroup employs 101 staff and targets markets in Australia, North America and Southeast Asia.

ComGroup recently developed digital radio technology, launching a series of digital radio terminal products in 2009. This core technology will now be deployed to Team Simoco's base station products, accelerating the introduction of digital infrastructure products and enabling the combined company to offer a fully integrated portfolio of digital infrastructure, base stations and terminals.

"The acquisition re-unites two businesses that share a 50-year heritage, common technology platforms and a global product brand," said Ian Carr, managing director at Team Simoco. "While trading separately for the last six years, ComGroup and Team Simoco have retained structural links through a research and development (R&D) joint venture."

The acquisition of ComGroup also includes **Dalman**, a manufacturer of simulcast and voting technologies. Dalman already supplies its products through Team Simoco and ComGroup channels. The combined company will

Vendors Market Digital Technologies on New Web Sites

Manufacturers of two new digital mobile radio European Telecommunications Standards Institute (ETSI) standards are promoting the benefits of the technologies through new Web sites.

The founding members of the Digital Mobile Radio (DMR) Memorandum of Understanding (MoU) Association formed the DMR Association to further promote the DMR standard. The association is establishing best practices for interoperability testing and validation of the standard. The organization will also create and promote a variety of services to increase the market for all companies in the value chain. This includes developing educational programs and tools such as the DMR Association certification program to easily identify equipment meeting the DMR standard. The new Web site is at www.dmrassociation.org.

"DMR testing will range from laboratory work to real-life field trials and deployments to ensure pre-certified equipment is put through its paces," said Tom Mockridge of Motorola and DMR Association technical chair. "DMR Association members and end users will be able to rely on and trust our certification."

Mockridge said the exact scope of interoperability testing is still being discussed. He said the technology has been deployed in 100 countries. Location-based services are one of the most popular applications for the DMR standard, Mockridge said.

Separately, members of the digital Private Mobile Radio (dPMR) MoU announced a Web site to promote 6.25-kilohertz FDMA technology at www.dpmr-mou.org. The site provides information to professionals and industry users about the technology.

The site includes details on the technology, the standards that apply to it and information on the members. The MoU rules and application form can be downloaded. dPMR is a narrowband technology and European standard TS102 490 and TS 102 658 targeted at low-cost digital PMR solutions.

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continue to trade as ComGroup and Team Simoco in their respective territories.

EUROPE

LONDON — Microbus vehicle-based computers are part of a series of vehicle manufacturers' police demonstrator cars. General Motors' U.K. Special Vehicles division recently launched new police-specification versions of Vauxhall cars. The Insignia and Zafira versions come pre-equipped from the production line with Microbus M-PC2 vehicle-based computers that control automatic number plate recognition (ANPR) software, the roof lightbar with 360 blues, side alley lamps, sirens and full radio equipment through the OptiVue touchscreen installed in the dashboard. Microbus video cameras are also specified for ANPR and driver behavior image capture.

Microbus technology also is being showcased in Airwave's new mobile data car (MDC) demonstrator. The vehicle was developed in association with Volvo, Ford SVP, Microbus and other technology suppliers.

"The vehicle demonstrator shows how applications can be integrated with vehicle systems and how they work in a real operational environment," said Richard Page, head of strategic marketing at Airwave. "Forces all know about mobile data but perhaps some don't fully appreciate the extent of the capabilities that exist today."

Separately, Microbus M-PC2 vehicle-based computers are part of a new closed-circuit TV (CCTV) car initiative piloted by Greater Manchester Police in the United Kingdom. Smart cars, which have a 3.6-meter mast with a camera attached, are parked at junctions to monitor traffic and catch drivers using their mobile phones or otherwise distracted at the wheel. Anyone seen driving while distracted is filmed by the cameras, and later, a letter is sent to the owner of the car, in many cases, along with a fine. The scheme is part of Greater Manchester's casualty reduction partnership.

NEWBURY, United Kingdom — South Yorkshire Police in October will give frontline officers access to real-time police information and records on their mobile phones through a service developed by **Vodafone** and **Airpoint**.

The software allows officers to access police records to identify a person, vehicle or location and complete forms. BlackBerrys provided by Vodafone will automate the Police National Computer (PNC) check and allow officers to enter information into the form.

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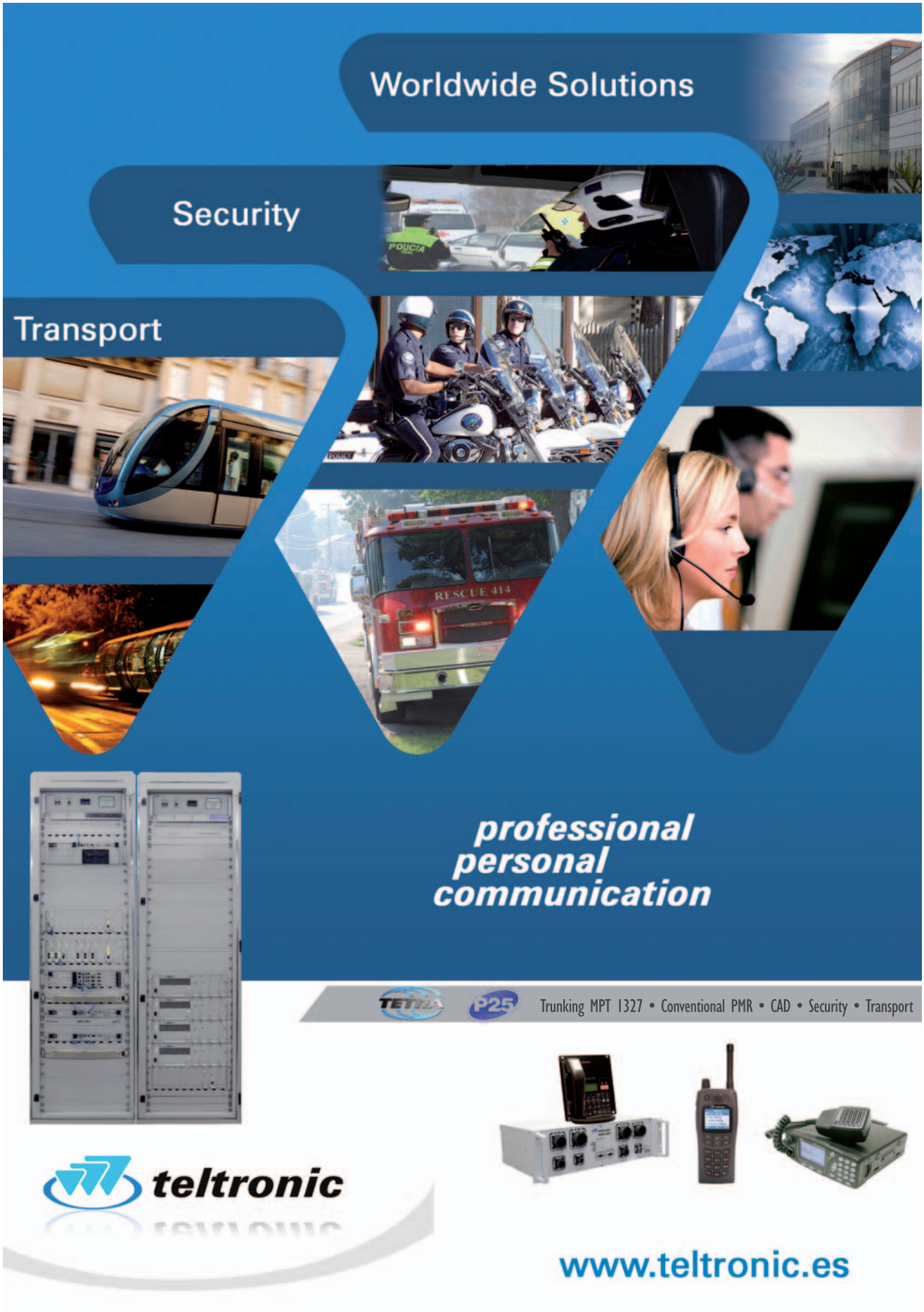
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Scottish Fire Service Buys ICU

Fife Fire and Rescue Service in Thornton, Scotland, unveiled a new major incident command unit (ICU) as part of an investment of more than £5 million (US$8.2 million) in new state-of-the-art rescue equipment and facilities. Developed in partnership with coach-builder Cebotec and technology supplier Excelerate Technology, the new vehicle will help improve the management of major incidents and achieve interoperability with other emergency services.

The Scottish government provides more than £24 million (US$39.4 million) in funding each year to support Scotland's fire and rescue services. This is the first ICU to roll off the production line as a result of the Scottish Executive's new funding program for communications technologies.

The new ICU is based on a Mercedes 7.5 ton Atego chassis and is equipped

with a rapidly deployable roof-mounted 98-centimeter satellite dish with a broadband connection for high-speed data, voice and video communications. The unit contains a communications suite and a meeting room.

The communications suite has a range of technologies. Four ruggedized PC terminals enable specialized applications. Satellite links enable video streams to incident commanders on the scene, as well as transmitted to other locations. VoIP handsets complement the existing VHF and UHF radio communications equipment.

Should the device be lost or stolen, it is automatically locked and password protected within 15 minutes. Once it has been reported missing, the IT department can remotely "kill" the device to prevent abuse or breach of data. South Yorkshire Police secured government funding for the project.

STOCKHOLM — A European consortium received the EUROSTARS award in the deployment of context-aware mobile services for emergency services and security personnel. The Context-Aware Mobility Platform for User Security (CAMPUS) project was developed by **Appear** and **Wireless@KTH** in Sweden, as well as **Page Up** in France.

CAMPUS is a 2.4 million euro (US$3.5 million) project that began in June. Using context-aware mobile technology, intelligent handheld devices can receive alerts, connect to surveillance cameras or environmental

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sensors, providing complete situation awareness to field security and emergency personnel.

The project brings situational (context) information to field agents, using existing technologies including GSM/HSDPA, TETRA, Wi-Fi and radio frequency identification (RFID), as well as more recent technologies such as augmented reality. Field agents can receive large quantities of relevant information from the command center in real time and gather data from nearby sensors directly to their personal mobile devices, while positioned outdoors, indoors or even underground.

The group started pilot deployments with organizations such as the Rotterdam Police.

LONDON — PageOne launched what it called the United Kingdom's first two-way paging service. The service is targeted at emergency services.

Control centers can determine the availability and location of staff and devices. With this greater intelligence, controllers can make rapid, informed decisions on the mobilization and coordination of resources.

PageOne's two-way in case of emergency (ICE) pager provides delivery receipts and confirms that a message has been read and acted on, providing guaranteed end-to-end messaging. The same two-way intelligence has also been applied to paging broadcasts, where all individual members of the broadcast can respond in the same way. The pagers also include a GPS receiver as standard, providing recent location information on every reply message, allowing improved auditing of crisis incidents and better management of resources.

PageOne officials said the benefits of paging — reliability, true broadcast capability and robust simplicity — combined with two-way response functionality, will greatly appeal to public and private organizations.

LATIN AMERICA

SAO PAULO, Brazil — Zetron delivered its Acom Project 25 (P25) system to **Tait Radio Communications** for installation at CTEEP, an electric utility in Sao Paulo. The system is compliant with the P25 Digital Fixed Station Interface (DFSI).

The system will connect 12 Acom dispatch consoles at six sites. This project follows the successful delivery and installation several months ago of another Acom P25 system to the Brazil police for operation at three different cities in the Sao Paulo region.

ASIA/PACIFIC

CHRISTCHURCH, New Zealand — Tait Radio Communications and New Zealand Police rolled out the first phase of a new nationwide Project 25 (P25) trunked digital radio network.

Regional police from the capital city Wellington are the first in the country to use the digital radio technology since the successful installation of more than 33 radio sites in June, Tait officials said. The rollout also includes upgrading the portable and mobile radios used by staff and officers to Tait P25 digital radios.

New Zealand Police and Tait signed a partnership charter to further enhance the relationship between the two organizations. "Now the same digital technology will be installed in two further regions in time for the Rugby World Cup in 2011," said Tait Radio Communications Managing Director Frank Owen.

(Continued on Page 18)

New Emergency Services Program Launches in Europe

A new program set to launch in five European countries will provide disabled people with direct access to emergency services. In France, the Netherlands, Sweden, Spain and the United Kingdom, Reach112 (Responding to all citizens needing help) will deploy a new solution to allow thousands of people to communicate via video, voice and text simultaneously.

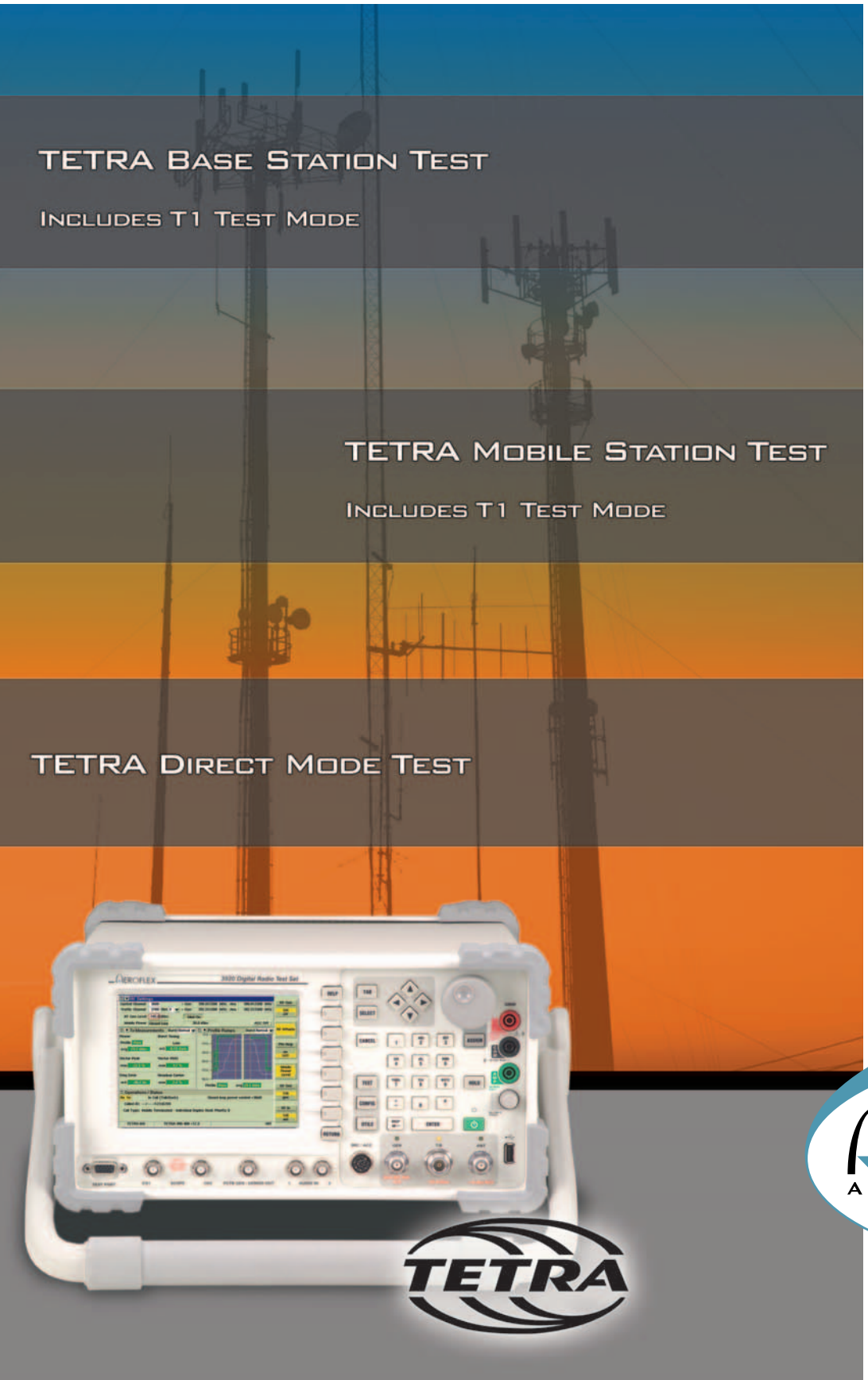
The project will offer relay services to connect users with different abilities to others and will provide access to emergency services. The three-year project began in January and is partially funded by the European Commission, gathering 22 partners from all over Europe, including user organizations and major global telecommunications companies.

The European emergency number 1-1-2, which is used to contact emergency services free across the European Union (EU), is currently not accessible to the majority of disabled people. "Reach112 will test innovative solutions to ensure that 1-1-2 can be reached by every citizen all over the European Union and set the guidelines for the take-up of new communications technologies by EU emergency services," said Olivier Paul-Morandini, president and founder of the European Emergency Number Association (EENA).

Users can call each other in video, voice and text via the Internet across national boundaries. It will also allow sign language users to communicate through remote interpreting services and via other relay services, using text to talk to voice users.

During the one-year pilot in the five countries, IP devices will be provided in the homes, workplaces and on the move. The service will be integrated with existing platforms and emergency service frameworks. Additionally, a protocol for the exchange of information between emergency services will be available.

Aeroflex – For Complete, Reliable TETRA Test



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(Continued from Page 14)

NEW DELHI — EADS Defence & Security (DS) signed a contract to deploy a TETRA radio network to secure the Indian Parliament. The digital, encrypted communications system will ensure voice and data communications, automatic vehicle and personal location, and the capacity to connect to high-speed data applications.

"The specifications of this advanced digital communications system for the Indian Parliament are in line with security requirements in the wake of the Mumbai terrorist attacks of November 2008. This system is needed to better secure the Parliament at the heart of Delhi," said Sandeep Salunke, director of Indian Parliament security.

VIENNA, Austria — In its first public-safety contract in Australia, **Frequentis** delivered a Project 25 (P25) communications system for the Department of Parliamentary Services (DPS) in Canberra. The department awarded the prime contract to **Fujitsu**.

The network will include an integrated information and command-and-control voice switch. Frequentis will deliver an ICCS3020 including a DIVOS recording system for the two Parliamentary Security Operations Rooms (PSORs) in Parliament House.

ITU Helps Bolivia Find Orbital Position for Proposed Satellite

The President of Bolivia Evo Morales Ayma visited the International Telecommunication Union (ITU) in September to discuss Bolivia's filing for an orbital position for its geostationary communications satellite.

Satellite communications is of vital interest to the social, economic and cultural needs of the people of Bolivia, President Morales said. He said Bolivia enjoys "an incomparable geostrategic position as it is located in the heart of South America, enabling it to serve as an integrating hub for all forms of communications imaginable."

Because the arc of interest for a geostationary satellite orbital position for Bolivia is crowded, it would require complex coordination to achieve agreement for the mutual operation of all communications satellites in the region. Valery Timofeev, director of ITU's Radiocommunication Bureau, said ITU will assist Bolivia, but to avoid interference and possible complications, the task will be meticulous and time consuming.

President Morales, ITU Secretary-General Hamadoun Touré and Timofeev

agreed to hold tripartite discussions with the Bolivian government, ITU and industry to find the best technical solutions. President Morales will likely announce the launch date of the satellite at the next ITU Plenipotentiary Conference in Veracruz, Mexico, by October 2010.

The ITU Radiocommunication Bureau has been providing technical support to the government of Bolivia to identify an appropriate orbital position for the future satellite communications network. The studies recall the international rights and obligations of member states pertinent to the application of the ITU radio regulations. ITU's feasibility study has identified options relating to the availability of orbital slots and frequency bands associated with the different procedures contained in the regulations.

TRANSACTIONS

■ **Motorola** was contracted to supply the motorways in Thuringia, Germany, with TETRA digital radio infrastructure.

■ **Teltronic** was contracted to supply a US$15.6 million wide-area TETRA network to the government of the Canary Islands.

■ **Sepura**'s TETRA radio terminals were supplied to the Leonardo da Vinci-Fiumicino Airport in Rome. Damm provided the infrastructure plus a digital geolocalization system that provides coverage to the entire international airport.

■ Devon and Cornwall Constabulary in the United Kingdom rolled out **Sepura**'s Radio Manager Server version with remote clients.

■ Rio de Janeiro State Prison Administration is using **Verint Systems** video intelligence solutions to help enhance the security of its maximum-security prison complex, as well as decrease violence and misconduct.

■ **Teltronic** was selected to supply two new TETRA systems in Algeria. The separate networks supplied for the Oran light railway and Constantine light railway began rollout during the second quarter.

■ Arts and entertainment venue the Southbank Centre deployed a **Team Simoco** radio communications system.

■ The Hungarian National Directorate General for Disaster Management added **Sepura**'s repeaters to its fleet of Sepura TETRA radios for its fire brigades.

■ **EADS Defence & Security (DS)** and Beijing JustTop Communication signed a contract for the phase four JustTop project for the Beijing government shared TETRA network.

■ **Pctel** announced that a major U.S. defense contractor will deploy its high-precision Wide Area Augmentation System (WAAS) ground station GPS antennas for the Indian Space Research Organization (ISRO) and Airports Authority of India.

■ **EADS Defence & Security (DS)** is upgrading the TETRA network of utility CLP Power Hong Kong with capability and functionality enhancements.

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Photo courtesy Motorola

How to Buy a Network

7 Points You Must Consider When Buying a Communications System

By Ricardo Bovo

Communications is critical, particularly for a power plant or refinery. Problems with communications could cost lives. Unfortunately, communications expenses sometimes are not in the top priorities for budgets, even though communicating is a mission-critical operation for utilities. Imagine a city with 20 million inhabitants that has a power shortage during rush hour when you are returning home. As a commuter, you likely expect that the utility company is well prepared to re-establish electricity and that power will return in minutes.

To meet this expectation from consumers, a power company must be prepared to put work teams in the field, find the problem and fix it quickly. Once the workers are in the field, the work has just begun. The dispatch center will start monitoring the teams in the field to understand the cause of the power shortage. Everybody counts on the radio communications system to get information and do their jobs. The company call center will receive hundreds of calls from different consumers informing the company of the same problem and asking the same question: When will power come back?

If you have a good radio communications system, you may have the answer immediately. If you don't and

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you are responsible for communications for a utility or other company or organization, there are several issues to consider to ensure a reliable, effective network.

Digital Benefits

The first point to consider is the modulation: analog or digital. Digital has benefits, particularly because users can bundle data in the same channel. In the digital world of 1s and 0s, voice and data are just information sent over the air. The application in the receiver point will treat it as voice or data; it could be a two-way radio or a computer. In any case, there's software inside to translate it into information, either voice or data.

Another benefit of digital modulation is spectrum efficiency. In some regions or countries, new frequencies aren't available in VHF, UHF or 800 MHz bands. For radio communications professionals, frequency is as important for the technology to survive as water is for humans to survive. Without frequencies available, you can't build a wireless network.

7 Factors to Consider Before You Buy

1. Standards
2. Frequency band
3. Interoperability
4. Coverage area
5. Manufacturers
6. Safety
7. Network ownership

Data applications also drive digital technology deployments. For utilities, service tickets handled remotely over RF channels are important. Many companies have requested applications to manage vehicles, workers and tickets over the same radio network as their voice services. Applications that manage vehicle fleets and provide voice over the same resource are crucial.

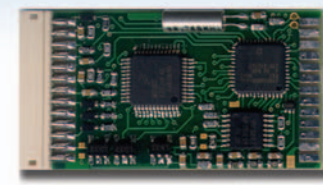
It is also important to consider privacy and security. Digital systems can leverage privacy because of the modulation, but you can also add security with encryption. There are several encryption algorithms for digital systems. Some are software based and others are hardware based, but both methods are reliable.

Digital Protocols

If a digital network is selected, there are several protocols to consider. For mission-critical communications, two open standards are Project 25 (P25) and TETRA. Both standards are reliable and state of the art, but in certain cases one protocol will likely fit better than the other. Following are some points to consider during the decision-making process in addition to your budget. Create a table and tally positive or negative points for each consideration specific to your system and needs.

Midian's NEW Voice Scrambler

Midian's new VS-1200 is a DSP based FFT Frequency Domain voice scrambler offering a high level of voice security. This technology is equivalent in security to rolling code scrambling, but doesn't require synchronization.



This type of encryption and the lack of synchronization result in excellent audio quality, high security and enable the VS-1200 to be used in virtually any type of radio system. These systems include Conventional two-way, HF SSB, Trunking, and Voter.

The VS-1000 (inversion scrambler) and VS-1050 (inversion scrambler with ANI) are also available.

Benefits of the VS-1200 include:

- 3 user-programmable levels of security
- No synchronization
- Programmable gain controls for audio levels
- ANI in Motorola's MDC-1200, Kenwood's FleetSync, DTMF, 5-Tone & M/A-Com's G-Star
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* All specifications are subject to change without notice.

1. Standards. Always consider open standards, because they will allow you to select different suppliers in the future. Because of cultural reasons, P25 is often used in the United States, Latin America and some Asian countries, while TETRA is generally used in Europe, the Middle East, Africa and many Asia countries. Frequency allocation requirements for P25 and TETRA are different, and sometimes spectrum is the biggest obstacle for TETRA in some Latin American countries. There are TETRA systems in Latin America, but not in all countries. In addition to the United States, P25 systems are available in almost every country in Latin America.

Both standards provide spectrum efficiency. P25 uses 12.5-kilohertz channels in FDMA technology but will migrate to TDMA technology in 2010. TETRA uses 4:1 TDMA modulation.

2. Frequency band. Each country has its own spectrum regulations. Sometimes channels aren't available in the band needed. Carefully study local regulations to understand if any standard can be used or whether the frequency bands available could drive your decision.

Data applications also drive digital technology deployments. For utilities, service tickets handled remotely over RF channels are important.

P25 equipment is available in VHF, UHF, and 700 and 800 MHz bands, with channel spacing at 25 or 12.5 kilohertz. P25 technology is available in trunked or conventional mode in each band. TETRA is available in trunked mode for UHF (350, 380 – 400, 410 – 430 and 450 – 470 MHz) and 800 MHz, but it's not available in conventional mode.

Depending on the number of channels available and number of users, a network could be conventional or trunked mode. If you have a large concentration of users in a single site or a small coverage area, a trunked network may be most appropriate. But if you have a small number of users in a wide area, conventional VHF or UHF equipment could work well, but the only standard option is P25, because TETRA doesn't provide a conventional mode.

Some countries don't allow trunking in VHF or UHF spectrum, only at 800 MHz. Contact your local government telecom agency to better understand local regulations.

3. Interoperability. Sometimes

(Continued on Page 33)

TETRAnews

INFORMATION FROM THE TETRA ASSOCIATION ISSUE 2/2009

RUSSIA – SEIZING THE OPPORTUNITY

Eighteen months after the Russian government laid out plans for a professional radio network, Rob Bruce, sales director for EMEA at Axell Wireless, discusses why Russia will be the new hotspot for the digital trunked radio system TETRA.

The TETRA Association event 'TETRA-moving forward in Russia' will be held on October 1 and 2 at the Holiday Inn Suschevsky, Moscow. For full details contact russia@tetra-association.com

In 2003, eight years after the Schengen Treaty was created to enable the free movement of people and public safety services across international borders, the Russian Governmental Electronic Communications Commission made a commitment to prioritise the installation of TETRA (terrestrial trunked radio). It outlined its plans to develop its professional network and upgrade and consolidate Russia's defence and security systems by 2015 in its TETRARUS plan in 2007. The EU and Russia now co-operate on a number of challenges on an international level, including organised crime and counter-terrorism, both of which

continued on page 3

DRIVING THE MARKET IN MUNICH

See the TETRA World Congress overview - centre pages

Working towards tailor-made TETRA in China

More than 70 senior delegates, officials from China's provincial and municipal government witnessed the official Signing Ceremony

Motorola and Guangzhou Haige Communications Co., Ltd. have formed a strategic alliance to promote and drive the localisation of TETRA products in China to provide users with tailor-made products and services.

There has been rising demand from domestic users in China for digital trunking communication solutions. With the rapid growth and development of Guangzhou and the local economy, as well as the 16th Asian Games in 2010, the Guangdong province and city is increasing the requirements for building a special wireless communication network. The Guangzhou metropolitan government has announced that it will keep investing at a steady pace to enable the development of a "Digital Guangzhou" and "Wireless Guangzhou".

MEETING THE NEEDS OF A RAPIDLY GROWING ECONOMY

Subodh Vardhan, Country Head, Motorola India

The TETRA Association event 'TETRA-moving forward in India' was held in New Delhi in early September. See page 8 for details of the full TETRA Association global events schedule. For further information on exhibiting and attending, please visit www.tetra-association.com or contact nicola.morrison@tetra-association.com

Wireless is the future and the primary drivers for technology adoption include scalability, ease of roll-out, ease of use and security. Wireless communications is already an indispensable part of today's government operations and a0less technologies such as TETRA to play an increasing role in meeting the needs of a rapidly growing economy.

While the current economic downturn and the heightened security concerns pose various challenges, we see growth opportunities through providing mission-critical technologies and enterprise mobility solutions not only to meet the public safety and security needs of government but also deliver business-critical solutions to help commercial and enterprise customers improve their productivity, safety and profitability.

With today's increased emphasis on public safety and asset protection, the world has begun looking at security more closely and critically.

continued on page 3

The Chairman's Vision

I would like to take this opportunity to thank everyone who participated in this year's TETRA World Congress in Munich. Whether you were behind the scenes, on the stage, on an exhibition stand (and there were some very long hours worked!), a delegate or a visitor, the combined input delivered a truly excellent event.

The last twelve months have been very busy for the Association and we have been addressing several key areas for the development of the TETRA market.

With the expectation of increasing demand for data services in the years to come, the Association has been lobbying hard for new spectrum, especially for future broadband services. The Association's Spectrum working group has been lobbying Governments, the Regulators and the European Commission to stress the importance of supporting mission critical communications.

Whilst on the subject of Public Safety, the Association has also been working with ETSI's TC TETRA to determine the user needs for future broadband services and they are now looking at the available technologies that might be incorporated into a TETRA offering. Support from industry and from the users is good and I believe this will prove to be a very important enhancement to the standard in the years to come.

TETRA is now present in well over a hundred countries of the world However, users in North America have so far not had access to the technology. We have been working hard on solving this problem, and I am pleased to report that a TETRA pilot system is in operation in Canada and more pilot systems are planned for the US. These pilots are very important to enable North American users to see if TETRA really does meet their needs and the TETRA industry is putting substantial effort into making these happen. We will report on the progress later in the year.

We have been talking about TETRA's Enhanced Data service for some time now. It is a well known fact that it takes a long time from the start of standardisation to product delivery, so it is particularly pleasing to see contracts being awarded that include TEDS technology.

Two contracts are in the public domain already and with different suppliers – Motorola in Norway and EADS in South Africa. With these two contracts now public you can be sure that other manufacturers will be following suit.

Overall, the TETRA market continues to grow and has not yet shown any significant effects from the global financial situation. Many people still believe that TETRA is primarily a Public Safety technology, but our analysis of the data shows that TETRA really is broadening its user base.

To help maintain this growth, the Association has a schedule of events designed to take TETRA to its markets and to ensure that the technology is profiled and promoted. Details of all events can be found at www.tetra-association.com – please do support these events in your country or region so we can ensure the benefits of TETRA reach as wide an audience as possible.

Phil Godfrey

Chairman, TETRA Association

Fuel cell first for Denmark's SINE network

A total of forty Motorola TETRA base stations with fuel cell back-up are now live across Denmark's SINE public safety network, with approximately 50 planned and commissioned for installation throughout the remainder of the year.

The environmentally friendly, fuel cell-based back-up solution was developed with Dantherm Power.

"The use of our hydrogen fuel cell technology in mission-critical environments provides public safety networks across the country with uninterrupted network access." says Per Albæk, CEO for Dantherm Power. "Our partnership with Motorola is a world's first and we hope to continue developing innovative technology that helps professionals do their jobs more effectively."

Government guidelines dictate that batteries or conventional generator solutions have to be provided as a backup for main power at critical locations or if the main power has regular outages. However, conventional diesel or petrol-based generators have a number of disadvantages, including carbon emissions and noise. Fuel cell technology offers a no carbon, low acoustic alternative to match the needs for TETRA base stations in challenging locations. They are proven in critical power back-up situations and can run for extended periods limited only by the supply of the hydrogen, and the only emission is water.

Where the fuel cell power system is being used at a TETRA base station in an emergency, and no main power is available, excess back-up power can be used to recharge TETRA radios, eliminating the need for the user to return to the base to recharge.

Welcome!

The TETRA Association welcomes the following new members:

Eurofunk Kappacher GmbH	Austria
TRD	Egypt
7layers AG	Germany
Servicios Troncalizados, S.A. DE C.V	Mexico
Grupo Comunicaciones Y Sonido, S.L	Spain
SITA SC	Switzerland
KC Global Tetra Ltd	UK

TETRAnews

Comments and contributions welcomed, please send to **editor@tetra-association.com**

Technology takes to the road

In-vehicle computers are playing a major role in a series of vehicle manufacturers' police demonstrator cars. General Motors' UK Special Vehicles division has launched all-new police specification versions of Vauxhall cars.

The Insignia and Zafira versions come pre-equipped from the production line with Microbus M-PC2 vehicle-based computers.
These control Automatic Number Plate Recognition (ANPR) software, the roof lightbar with 360 blues, side alley lamps, sirens and full radio equipment through the dashboard touchscreen.

Microbus Advanced Video cameras are also specified for ANPR and driver behaviour image capture.

The Vauxhall Astra features the Microbus LINX Tablet PC.

The technology is being showcased in Airwave's new mobile data car (MDC) demonstrator, launched at the end of June. The vehicle has been developed in association with Volvo, Ford SVP, Microbus and other leading technology suppliers. Both Airwave and Microbus will be taking the vehicle on a series of road shows in the UK throughout the coming months and aim to increase awareness of mobile data functionality to blue light communities.

Richard Page, Head of Strategic Marketing at Airwave says: "The vehicle

demonstrator shows how applications can be integrated with vehicle systems and how they work in a real operational environment. Forces all know about mobile data but perhaps some don't fully appreciate the extent of the capabilities that exist today."

RUSSIA – SEIZING THE OPPORTUNITY

continued from page 1

require seamless communications to be effective. There will also be stringent communications demands around the upcoming 2014 Winter Olympics. The investments behind these programmes offer a potential antidote to the 'tech crunch' western vendors are battling with.

A major facet of the defence and security radio upgrades is streamlined and standardised systems that ensure effective and responsive cross-border communications in the event of a terrorist threat, for example. Neighbouring countries Estonia, Latvia and Lithuania are also investing in TETRA networks, creating an added incentive for the Russian government to push ahead with their radio network enhancement programme. Disparate networks results in incompatibility between systems and poor interaction between public safety agencies.

This co-operation, driven by the need for improved communication for security and defence, is paralleled by the growth of industrial development. Russia has, for example, seen the aviation, oil and petro-chem sectors expand significantly with increased international trade.

Rob Bruce, Axell Wireless

These growth opportunities for TETRA have also been echoed by the national operator Russian Railways, which is responsible for almost 80 percent of Russia's railway transport (passenger and freight). It has also embarked on a programme of modernisation, including the development of an automatic railway management system, and migration from an analogue to a digital radio communication system.

So, for the communications industry, the first half of the battle has been won. TETRA has been acknowledged as the standard for both defence and security as well as being increasingly used in the key vertical sectors such as rail, oil and aviation. The opportunity exists – we simply need to take advantage of it and make it work.

MEETING THE NEEDS OF A RAPIDLY GROWING ECONOMY

continued from page 1

In the wake of an unpredictable series of natural and man-made disasters, and terror attacks faced by major cities the world over, security has become a major priority for government agencies and large enterprises worldwide, including India. Despite the challenging economic environment it is expected that mission-critical communications and homeland security will remain high priorities.

Subodh Vardhan, Country Head, Motorola India

Motorola has won contracts to equip three international airports in India (Delhi, Bangalore and Hyderabad) with TETRA networks, and in the transportation sector supplies to the metro rail system in Delhi, one of the largest in terms of people movement, as well as to larger enterprises such as Central Railways in India.

New train antennas at TETRA India

Panorama Antennas are showing the new TRNB train antenna series at 'TETRA - moving forward in India' (see Events, page 8). Designed specifically for use on underground or overground trains, the TRNB has an omnidirectional peak gain of 2dBi. The TRNB-S1 series covers the TETRA UHF trunking bands along with the option of a DC grounded GPS antenna, all in one housing. TETRA UHF is a requirement on the Indian railway, the busiest in the world.

Complementary acquisition

Team Simoco has announced the acquisition of ComGroup Pty Limited. ComGroup is the designer and distributor of Simoco branded professional mobile radio (PMR) Terminals, and will be merged with the existing operations of Team Simoco.

Located in Melbourne, Australia, and Andover, UK, ComGroup employs 101 staff and targets markets in Australia, North America and South East Asia. The acquisition complements Team Simoco's presence in European, Chinese and Latin American territories.

Munich 2009 – an overview of this year's

The 2009 TETRA World Congress, held at Munich's ICM, attracted a record number of visitors, with over 2,500 people talking TETRA during the week.

Many of those visitors passed through Munich Airport, which currently welcomes around 38 million people a year – a figure forecast to grow by 20 million over the next five years. The airport's TETRA system, supplied by Motorola, has 1700 users, responsible for apron and airport control, terminal services, ground handling and facilities management, among others.

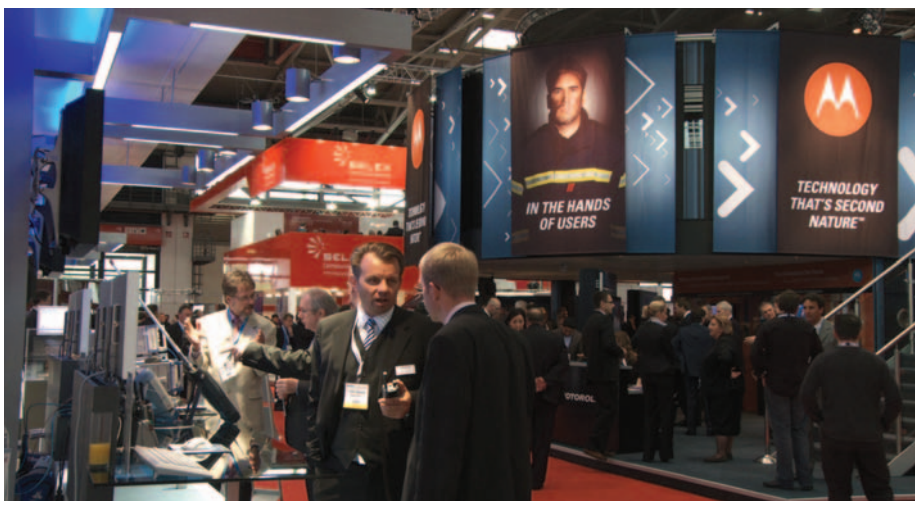
Motorola hosted 15 local and international journalists who visited the airport control tower and had a live demonstration of the TETRA system.

Tom Davies, event director of the Congress organiser IIR, said: "This year's TWC was an outstandingly successful event despite the economic climate, and has shown the solid strength of the TETRA market."

"On behalf of everyone here at Samdale I would like to say a big thank you for arranging a great show in Munich! We felt that everything ran very smoothly and that the show was a great success. The mix of companies exhibiting and the quality of delegates who attended provided a busy few days for us on our stand.

We look forward to working with you all again for next year's show in Singapore!" Samdale

"Thank you IIR for a well organised TWC. Will see you in Singapore!" MCS Digital



Outstanding contribution to TETRA Award 2009

Kees Verweij accepts the Outstanding Contribution to TETRA Award

The Outstanding Contribution to TETRA Award for 2009 was presented at the TETRA World Congress to Kees Verweij, ICT engineer for Public Safety within the Vts Police Netherlands organisation. The recipient of this Award is decided by the TETRA Association, and goes to an individual who has made a significant commitment to advancing TETRA.

Kees joined the Dutch Police in 1991 as a radio and system test engineer. He has been involved in C2000, the Dutch public safety network, from helping to write the requirements specification, through tender evaluation, contract negotiation and system testing to implementation and ongoing development. He is currently working on TETRA Interoperability, mobile data, TETRA Inter System Interface and Air-to-Ground operation, for which he specified the European frequency plan.

Kees represents C2000 on the TETRA Association Technical Forum, TETRA Association Operator/User Association, TC TETRA plenary and TC TETRA Working Group 1.

"Kees has a heart and soul connected to the TETRA standard," said Hans Borgonjen, TETRA Association vice-chairman and a colleague of Kees for over a decade. "He is committed to sharing knowledge and ensuring that project successes are made available on an international basis. He works for the good of the technology on a global basis."

TETRA World Congress

"As a first time exhibitor, I wanted to thank you all for the great work and collaboration in the days towards the event. It was a great success for us – with lots of visitors.

We already look forward to next year's event."

Kolibri Systems

Angola The Angolan Armed Forces and Thales have signed a contract for the supply of a communication network using Thales' DigiM@x TETRA over IP solution. The network will be deployed in 2010.

Luanda, capital city of Angola

Four Angolan agencies will share the TETRA DigiM@x multi organization network based on a TETRA VPN managed by the Angolan Armed Forces.

Algeria Teltronic has supplied two new TETRA systems in Algeria together with its partner, EFACEC. The separate networks supplied for the Oran light railway and Constantine light railway started roll-out in the second quarter of 2009.

Australia DAMM has been awarded the contract to supply TetraFlex® TETRA Infrastructure at the Rio Tinto Mining Company in Perth, Western Australia, through its partner GMG Solutions.

Bulgaria The Bulgarian Minister of Interior, Mr. Mihail Mikov, has officially inaugurated a completed phase of the TETRA network for the Bulgarian Security Forces. At the end of December 2008, the Bulgarian Finance Minister awarded EADS the contract to deliver a turnkey extension of the TETRA network to the Bulgarian Border Police.

China EADS and Beijing JustTopCommunication Co., Ltd have signed a contract on the Phase-4 JustTop project for the Beijing Government Shared TETRA Network. The expanded system will enhance network capacity and coverage ability, and can provide communications for the Beijing Government and Municipal Committee, the Public Security Bureau, traffic police, armed police, urban management, and other important organisations in Beijing during the People's Republic of China 60th Anniversary Celebration on October 1.

JustTop, Beijing Government Shared TETRA Network is the largest TETRA network in Asia and the largest city wide TETRA network in the world. It provides radio communications for the city of Beijing and environs.

Germany Sepura, in co-operation with Selectric GmbH, is to supply digital radios to the German state of Baden Württemberg.

First users operational in Baden Württemberg

Baden Württemberg is the fifth German state – of the six gone to tender for the provision of digital terminals within the BOSNet framework - to select Sepura radios for its secure communications needs.

The contract is for the supply of over 18,000 digital radios to the Police Force – the first radio users will be operational this month (September 09).

IMAGIN puts police in the picture

A new technology that allows police officers to view images on their digital radio sets is the latest tool in the fight against crime.

Hampshire Constabulary has become the second and largest police force in the UK to use the IMAGIN (Images Made Available to Groups or Individuals over Networks) technology, originally developed and implemented by Alastair Garro of Northern Constabulary.

Members of the public reporting a missing person, for example, will now be asked to email a photograph to a dedicated email address. That image can then be made available within seconds to groups of officers in a specific area.

Staff in the police control room will also be able to search existing databases such as the constabulary's Record Management System and the DVLA driver database for appropriate images.

Police officers will be able to spend more time on the streets – making the images available for them to view on their digital radios means they no longer have to return to the station to pick up a photograph or attend a briefing.

Missing people and wanted people can be identified and tracked down more quickly and effectively – a development that has the potential to save lives.

In addition, police officers will be better prepared when dealing with potentially dangerous situations or criminals as there can be no doubt about identity

Deputy Chief Constable Simon Cole said: "This is a really good piece of technology that allows us to get pictures out quickly to officers and staff on patrol, especially in critical situations when every second counts.

This could be a picture of a missing person or a person we want to arrest. A picture speaks a thousand words and is just so much more accurate than describing somebody.

We have had a number of situations already where officers out on patrol have been given false details by individuals, and with the help of the picture that was made available to the officers within seconds it was not difficult for them to work out that the person in front of them didn't look like the person whose name they were using.

Deputy Chief Constable Simon Cole and controller Pamela Jackson of Hampshire Constabulary demonstrate the IMAGIN system.

The costs of implementing this technology are minimal as we have already had the radio system in place. The benefits to the public as well as our officers, however, are significant. The ability to locate missing people or track down criminals more quickly will help us to provide an improved service to the public."

The implementation of IMAGIN was part of the Airwave Assisted Implementation Project funded by the National Police Improvement Agency and involved a working partnership between Hampshire Constabulary, network provider Airwave, and Motorola, who provide Hampshire Constabulary with TETRA terminals.

Motorola has won the second terminal tender in Berlin for delivering digital public safety radio communications for the Federal State of Berlin. The framework agreement, from the project group for BOS digital radio in the Berlin Senate, is for the delivery of 14,100 TETRA digital two-way radios, including accessories and services. The terminals will be used by the police and fire brigades as well as other security authorities and organizations. The agreement runs over a period of two years.

Hong Kong EADS is upgrading the TETRA network of CLP Power Hong Kong Limited (CLP) with capabilities and functionalities enhancement. "Upgrading our TETRA network will further enhance our operations' efficiency so as to serve our customers with better effectiveness" said Mr. WY Chu, Telecommunications Manager, CLP.

Hungary The National Directorate General for Disaster Management in Hungary has added Sepura's Repeaters to its fleet of Sepura TETRA radios for its fire brigades.

Romania The Romanian Special Telecommunications Service (STS) has selected APD Communications' vehicle locations systems, INCA devices and Co-Ordinator fleet location management system for the Romanian emergency services. The deployment is APD's first in Romania.

Spain Teltronic, together with partners, Sampol and Tecnicas Competitivas, has been awarded the contract to supply a wide-area TETRA network to the Government of the Canary Islands. Extensive TETRA coverage will be available on all seven major islands. The initial value of the project exceeds 11 million euros.

Turkey DAMM has been awarded the contract to supply the TetraFlex® TETRA Infrastructure for the Samsun Light Rail project in Turkey. The contact was won through its Turkish partner ATEL. The system will use Motorola mobile radios, and Sepura portables and gateways.

UK Airwave has been awarded a £3m ten year contract with the UK Department of Health to support the new Hazardous Area Response Teams (HART).

HART teams are being established to enable ambulance personnel to work within the 'inner cordon' of major hazardous incidents. Until now, the ambulance service has worked only on the outer cordon, relying on the fire service to retrieve casualties.

James Price, HART manager at West Midlands Ambulance Service, has led the project to establish effective communications for the HART teams nationally.

EU Member States agree on data need

By Risto Toikkanen, TETRA Association Board Member with responsibility for the Spectrum Group within the Association

Development of regulation tends to be a sequence of successful progress and slow progress stages. The first half of this year seemed to be a successful period for the high speed data spectrum developments, but at the moment the forecast for success stories during the second half does not make a long list. That on the other hand gives confidence that any surprise likely would be a positive one.

EU wide ministerial support to improve radio communication

Sometimes one gets positively surprised by what can be achieved via European wide cooperation. When the EU police radio users set up an ad hoc radio technology group last year and set and ambitious goal to get the ministers of all the Member States to sign their recommendation, it looked almost like a lifelong exercise.

Yet in just under a year, the European Council of Ministers of Justice and Home Affairs agreed in early June their Recommendation on improving radio communication between operational units in border areas. The recommendation identifies two main areas for improvement: Cross-border interoperability by better interconnection of the existing radio systems and introduction of high speed mobile data services beyond the current capabilities.

The recommendation provides valuable practical guidance as it delivers concrete proposals to the Member States and the Commission to achieve the wanted improvements:

- development of intersystem interfaces with funding support from the Commission
- the CEPT/ECC to be mandated to study additional frequency allocations below 1 GHz
- European standard to be produced for high speed (broadband) data functionality
- in the long term, tight integration of voice and data solutions with migration path from the existing radio systems

The above list is not something totally new. The PMR community has worked on product interoperability and high speed data solutions for years. Inter-System interfaces have been piloted, ECC is already carrying out studies for new PPDR spectrum, and broadband standardisation plans are moved forward in ETSI. But now all those plans are formally confirmed in a Council deliverable by signatures of the ministers of every Member State.

Now that we know what the whole of Europe is asking for, we don't have much other option than to implement through ETSI, regulation and engineering labs, and eventually in the field.

PPDR spectrum progress in committees

Since the last issue of this paper the responses to the CEPT PPDR questionnaire have been submitted and analysed. The questionnaire attracted in total over 50 responses from users, operators, ministries, manufacturers, trade associations. The conclusions made in the resolution meeting of the CEPT project team in April were quite clear:

- Usage of mobile data in Public Protection and Disaster Relief (PPDR) is increasing rapidly
- Mission critical data applications need a dedicated radio system, while some other applications can be run also in commercial mobile networks
- The increased usage of data justifies the request for new radio spectrum

The project team meeting also suggested that the current military spectrum below 400 MHz seemed to be most feasible option. This suggestion was not however endorsed by the Working Group FM meeting in May, while other conclusions were agreed. ETSI was also requested to provide further clarification on the need of contiguous 2 x 16 MHz allocation, which has been delivered.

What will happen next in CEPT is preparation of a specific PPDR workshop planned for next March, to once more gather all stakeholders around the same table to see if there is common agreeable way forward.

We wrote last June a joint response of the TETRA Association and ten other organisations and companies to the Radio Spectrum Policy Group of the EC concerning their Digital Dividend spectrum Opinion document. We suggested that the needs of mission critical radio users are resolved in connection of this dialogue by identifying harmonised spectrum below 1 GHz and encouraging members states to find means to make this spectrum available at affordable cost to the users.

TETRA Events 2009/2010

Event	Date	Location	Organiser	Website
TETRA – moving forward in India	9 September	Crowne Plaza Delhi	TETRA Association	See **www.tetra-association.com** or contact **india@tetra-association.com**
The 3rd Annual City Rail 2009 World Summit	9-11 September	Marriott Hotel Shanghai, China	Global Leaders Institute	See **www.tetra-association.com** TETRA Association members' discount available
Southern African TETRA Association Workshop and Exhibition	16-17 September	Pretoria Gauteng Province South Africa	SATA	**www.sata.org.za**
TETRA – moving forward in Russia	1-2 October	Holiday Inn, Suschevsky Moscow	Infor Media Russia	Please contact **russia@tetra-association.com** for further details
The Scandinavian TETRA Seminar Oslo 2009	12-13 October	Radisson SAS Plaza Hotel Oslo, Norway	TETRA Forum Nørge	See **www.tetraforum.no**
Transport Security Forum and Disaster Management Response and Recovery	26-29 October	Grand Copthorne Waterfront Hotel Singapore	Asian Security Review	See **www.tetra-association.com** TETRA Association members' discount available
TETRA – moving forward in Chile	5 November	Grand Hyatt Santiago Chile	TETRA Association	Registration via **www.tetra-association.com** Please contact **chile@tetra-association.com**
TETRA – moving forward in Brazil	9 November	Rio de Janeiro Brazil	TETRA Association	Registration via **www.tetra-association.com** Please contact **rio@tetra-association.com**
3rd Annual Radio Comms Connect Conference and Exhibition	18-19 November	Etihad Stadium Melbourne, Australia	Westwick-Farrow Publishing	See **www.radiocomms.com.au/connect/2009**
Applications for TETRA	2 December	Britannia Hotel London UK	TETRA Association	Please contact **nicola.morrison@tetra-association.com**
Environmental Update	4 December	London Transport Museum, London UK	TETRA Industry Group	Details will be posted on **www.tetra-association.com**
TETRA World Congress	25-28 May 2010	Suntec Singapore Exhibition Centre	IIR and TETRA Association	See **www.tetraworldcongress.com**

Please see **www.tetra-association.com** for updates.
If you have any queries concerning the Events schedule, please contact **nicola.morrison@tetra-association.com**

Simplified user interface

Sepura's new STP8100 provides a simplified user interface optimised for fire and rescue, transport, utility and prison service users who frequently just need to adjust volume, send Status Messages and change their Talk Group, but still demand ruggedness and durability.

The STP8100 optionally includes Sepura's new Man Down sensor which triggers an alert when the radio detects 'non typical' user movement. Based on solid state 'motion sensing' technology, it detects motion in three dimensions, alerting colleagues and the control room should the user become incapacitated. This is a critical safety feature for all workers operating alone or in hazardous environments.

Mark Barnby, Product Manager for Sepura, said: "Our Man-Down sensor has been field-trialled by a number of fire services in Europe, and a major airline. We have listened to the operatives in the transport and utility markets and added functionality to cater for the specific needs of these types of user."

TF group drives application development

The TETRA Association Technical Forum (TF) meeting #52 was held in Helsinki, Finland.

To promote the development of applications for TETRA, the Applications Working Group (APPS WG), part of the TF, has set up a Wiki: see https://apps.tetra-association.com for more information, or contact Hannu Aronsson at haa@portalify.com

The next TF meeting will be held on 29-30 Sep 2009 in Copenhagen, Denmark. For information please contact Harald Ludwig at harald.ludwig@arico-tech.eu

More information on products and companies in this edition can be found at **www.tetra-association.com**

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For any other information please contact the TETRA Association's administration office by email: administration@tetra-association.com or visit the Association's website at **www.tetra-association.com**

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(Continued from Page 24)
upgrading an analog system to digital technology brings interoperability problems. What will you do with the large number of analog conventional or trunked radios? P25 can operate in both analog and digital modes, providing a migration path. The same radio unit can talk in conventional and digital channels one at a time. This allows a communications manager to send old radios to new areas and prioritize users. You can interoperate with dispatch consoles, but it requires a larger investment. Interoperability problems sometimes happen if the new digital system operates in different frequency bands.

4. Coverage area. Coverage is another important consideration. Usually, P25 is better for wide-area coverage, because of repeater transmission power. P25 transmission levels are more than 125 watts after combiner, and TETRA transmission levels are 25 watts after combiner. Be careful with some specs that say transmitter power; make sure this level is measured after a combiner because the loss at connectors, cables and combiners can drop signal up to 6 db, four times less. For example, 75 watts before combiner can result in less than 17 watts after combiner.

Subscribers of a P25 network have more transmission power than TETRA users, even in the same UHF or 800 MHz band. A P25 portable has 5 watts, and a TETRA portable has 1 watt. A mobile P25 has 45 watts, and a TETRA mobile radio has 3 watts.

The number of cell sites necessary to cover a city with P25 will be several times lower than with a TETRA system, even in the same frequency band, UHF or 800 MHz. Usually utilities have huge areas to cover, and in these cases, P25 fits better. However, if you have a small area to cover despite the number of users, TETRA can perform well. Airports, industrial plants and resorts are examples of favorable sectors for TETRA.

5. Manufacturers. Another important point to evaluate is the manufacturer. Carefully evaluate what manufacturers are available and what past experience they have in your country or region. Make sure a supplier has a local presence, not only representatives. Local staff is important when you need assistance and service. Ask the following questions:

- Does the manufacturer have several service centers or only one dealer?
- Does the vendor have a local facility with its own trained engineers?
- Does the company have local representatives, installations and employees?

Communications expenses are not always the top priorities for budgets, even though communicating is a mission-critical operation for utilities.

The amount of investment a supplier has made in a country often translates to its commitment to your system operation. This goes beyond the number of customers sold; local presence is important. Use the manufacturer staff to help you decide what bands to use or help secure a license. The supplier has people to address those questions and help you. Buy locally manufactured subscriber units when available; you can get local assistance instead of sending equipment to other countries for repair.

6. Safety. Some utilities, mainly petroleum, require intrinsically safe (IS) radios for hazardous areas. Some countries have specific regulations for those radios. Sometimes the factory mutual certification is not valid, and a local certification is required.

An IS radio can only be serviced by certified IS service centers; a normal dealer can't service an IS radio. If a radio loses its IS certification and there is an accident, a company using that radio could lose any insurance coverage. Before you send an IS radio to be fixed, make sure your service center is certified to do it. Always contact the manufacturer or your local certification entity to clarify. Sometimes the IS certification entity is different from the homologating entity.

7. Network ownership. Another point to consider is network ownership. Some utilities choose to leave mission-critical communications to cellular operators or SMRs. Utilities should rarely share their systems with commercial users. Requirements are different, but system availability is the same for all users on a public network. When a disaster occurs, you need the system up and running. Public systems often fail during disasters.

An alternative is to outsource your system, but only for your use. Do not share the network with commercial users. If you can't buy your own system, establish a lease agreement with a company that can provide the full system — repeaters and radios — but allow you to manage and control the network. You rent all the hardware, but the frequencies and control remain yours. ■

Ricardo Bovo is Motorola's account manager for utilities in Brazil. He has more than 15 years of experience in radio communications systems, most of them with Motorola. E-mail comments to ricardo.bovo@motorola.com.

The Best Data Network Plan

Planning can help you combine technologies for mobile access, remote monitoring and other applications in one effective system.

By Jim Gardner

The days of building large, single-technology networks — typically used in the oil and gas and other mission-critical industries — are likely behind us. Data and security demands at various levels of a large network are changing the game. Integrating various types of technologies can offer significant benefits that are easily and cost effectively incorporated into one cohesive network. There are options that provide better manageability, expandability, cost and speed.

If you are collecting data from multiple locations and delivering it to offices across a widespread area, no one technology can accomplish your objectives. However, by combining technologies, you can create seamless data streams from several locations and share data over a LAN or WAN with multiple users. The result is more effective and efficient management of the network and increased reliability through reduced downtime — all at a more affordable price.

Planning a network is the critical first step. Start by asking these questions:

1. What are the goals?
2. What are the limitations?
3. What technology is in place?
4. Do we want a wholesale change, or do we want to maintain and optimize what we have?
5. Who needs access to the data collected?
6. Who is responsible for maintaining the system?
7. What system components are available, and how do we choose the best fit?
8. Should the network incorporate mobile connectivity?
9. How will local and international regulations affect the plan?

Establishing Goals

It's important to start with the end goal in sight. How often do I need to poll? What are we trying to accomplish? If we need gas measurement, we can poll a few times a day. The electronic flow measurement (EFM) device will log hourly data on flow rate, pressure and temperature. We can poll to interrogate the EFM every four to six hours and bring back all the stored data at one time. If we are working on optimization, such as plunger lift, and need more granular data, the EFM can provide local control and archive the data. We also can speed up the polling cycle in one of several ways depending on the need.

First, we must know how much data we are moving. If the stored plunger lift data and gas custody transfer data come to a total of

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- Built-in GPS (Optional)

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- Enhanced 2-Tone/5-Tone/DTMF/MDC1200
- Remote Kill/Stun/Activate/Revive
- Call/Contact List
- Password Protection
- Full Keypad and Large LCD
- Lone Work /Security Check
- Status Display

PT8200
FM VHF/UHF Mobile Radio

- 128/256 Channel/8 Zone
- Enhanced 2-Tone/5-Tone/DTMF/MDC1200
- Remote Kill/Stun/Activate/Revive
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2,000 bytes of data, and the EFM talks to the radio at a port speed of 19.2 kilobits per second (kbps), how long will it take to poll a single EFM? Let's assume your request for data from the host is 200 bytes. This will take the host 0.08 seconds to load the request for data into the radio. The master radio will take 0.2 seconds to send the request to the slave over the air — assuming the over-the-air speed is 115.2 kilobits per second (kbps). It will take 0.08 seconds to load the data from the slave radio into the EFM. The EFM will need a couple seconds to process the signal — assume 3 seconds. It will take 0.83 seconds for the EFM to load the data into the slave and 0.2 seconds for the over-the-air portion of the transmission to return to the master radio. It will take 0.83 seconds to unload the data from the master radio to the host computer. In total, about 5.22 seconds per EFM will be spent retrieving the data.

Newer, license-free digital radios can talk over the air anywhere from 115 kbps to 1 Megabit per second (Mbps). The benefits of radios that talk faster than the port speed of the EFM is a high amount of open-air time while the data is loaded from the EFM to the radio, creating the ability to do real-time alarms in the middle of a polling cycle.

The same scenario with 500 wells could have a requirement to poll each well every 30 minutes. The simple math says it can't be done: 5.22 seconds to poll each well multiplied by 500 wells is 45 minutes to get a "round robin poll" or once around the field. High-speed Ethernet technology in conjunction with serial radios creates a hybrid solution. This allows users to subdivide the field and do multiple polls simultaneously. Because the Ethernet protocol allows multiple conversations at the same time, you can send multiple data requests to the field. Each Ethernet radio has an IP address and will only answer when that IP address is called. Many new Ethernet radios have built-in terminal servers so even if your EFMs aren't Ethernet compatible, the radio acts as a protocol translator and bridges the communications barrier between serial and Ethernet.

9 Questions to Ask For Network Planning

1. What are the goals?
2. What are the limitations?
3. What technology is in place?
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With legacy systems, a common way to accomplish high polling speeds is to replace the repeater infrastructure with Ethernet radios.

With legacy systems, a common way to accomplish high polling speeds is to replace the repeater infrastructure with Ethernet radios. Plug serial radio masters into the ports — most Ethernet radios have two serial ports — on the Ethernet repeater infrastructure radios and poll the serial EFMs in the field. Replacing the serial master and two serial repeaters reduces polling time by a factor of four. If we redo our math, we can now poll all 500 wells in 11 minutes. It's possible to achieve even greater time savings by using more Ethernet repeaters and serial masters. For instance, it used to take a user with 800 wells more than an hour to poll the field. After installing the Ethernet backbone with multiple serial masters, the user can poll that same field in five minutes.

An Ethernet backbone with a baud rate of 867 kbps and spread-spectrum radios that talk over the air at 115.2 kbps theoretically allow eight conversations at once. That scenario works if all the EFMs are the same type. What happens when half the field EFMs are from one manufacturer, and the other half are from a different manufacturer? Ethernet is protocol transparent as long as the supervisory control and data acquisition (SCADA) software (polling host) supports multiple protocols. Most new software packages do so with specialized drivers to support multiple protocols. The radios don't care what language the host has, which allows the various EFM protocols to all participate in the same radio network seamlessly. The messages all go into the same pouch and get to the right destinations. The IP addresses and port addresses sort out the messages back at the host so the correct data gets to the right recipient.

Data Access

Who needs access to the data? If the answer is only one office, the system can be fairly simple. Any Ethernet or serial solution can retrieve data and deliver it back to the host. In our complex data intensive world, data generally needs to be distributed to multiple offices and multiple individuals within each of those offices. The only effective way to do this is to use a WAN. If the offices are connected by a WAN or virtual private network (VPN), everyone with network privileges can access the master radio through the WAN or VPN, and therefore, access the EFM network.

Ethernet radios and most new spread-spectrum radios use digitally

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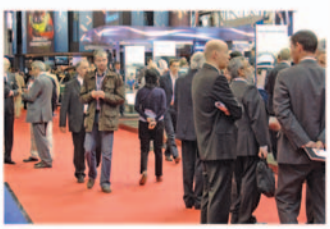
Full Story



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packetized protocols. In wireless Ethernet, each packet is wrapped with an IP addressing layer or IP wrapper, with the address of the recipient. Conversations are guaranteed to reach the proper destination, and responses are routed back to the originator. So far, we have limited the discussion to fixed assets that are always communicating from a known position and from the same position every time.

How can we plan for our work force to have mobile access to this system? Ideally, this would mean that anyone in vehicles could have the same rights and privileges they enjoy when they are in the office and connected to the LAN through their docking stations. Mobile access requires an Ethernet radio to be installed in a vehicle with a 12 VDC power supply; this can be accomplished with a cigarette-lighter-type power source and an external antenna on the vehicle's roof. For mobile access, how much bandwidth is needed? The question may be best answered by how many people need access at anyone time.

Track Data Movement Speed

Data Request Function	Seconds
Host makes request	0.08
Over the air	0.20
Slave gives request to EFM	0.08
EFM processes request	3
EFM responds to slave @19.200	0.83
Over the air	0.20
Master radio gives data to host	0.83
Total Time	**5.22**

Typically, bandwidth is distributed equally among users, so with 1 Megabit of bandwidth and four users, everyone has access to 250 kbps. As mobile access becomes more widespread, the demand for bandwidth increases. Many mobile users want Internet access to download documents and diagrams, which can require a lot of connection time and may be graphic intensive with product information. For most wireless networks, collecting data from remote assets is the first priority, and the mobile access is a secondary priority. Many users consider data collection important enough to maintain two separate systems: one for data collection and one for remote access. For both SCADA data and mobile access on the same network, it may be best to have a backbone radio system capable of 10 – 50 Mbps speeds.

Spectrum Regulations

Building wireless communications systems in foreign countries adds a layer of complexity to a preplanning strategy. It is important to know what frequencies are legal to use in each country. In the United States, the FCC is the governing body for all nonfederal spectrum,

and the rules for frequency allocation are widely known and straightforward. The United States, Canada and Mexico have a cooperative agreement that generally allows the use of the same frequencies in all three countries.

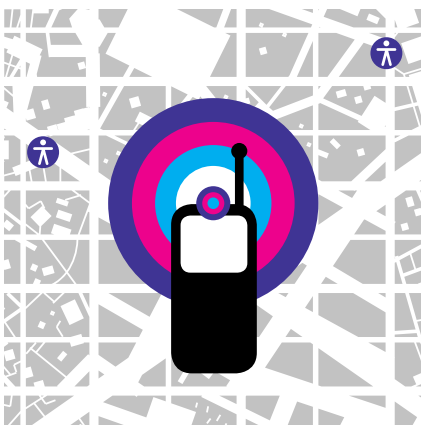
In other countries, the rules change dramatically. Every country has its equivalent of the FCC, but each has its own unique rules and regulations. In some countries, the 900 MHz band is legal to use, but the output power of the radio is restricted to a small portion, reducing the range and effectiveness of products operating in the frequency. In other countries, the 900 MHz band is reserved for military use. Always work with radio manufacturers or integrators familiar with local laws and regulations.

Once you know the rules and regulations, start developing a system based on the frequencies permitted. In this case, a path study becomes important for two reasons. First, returning to do repairs when things don't work is expensive, and skilled help may be hard to find, so a foolproof plan before you start a network can greatly reduce installation cost. Second, different frequencies have different characteristics, such as range, ability to penetrate trees and other obstacles, and general propagation over hills and valleys. A path study will take these frequency characteristics into account and help design a system within a product's limitations.

A path study will take frequency characteristics into account and help design a system within a product's limitations.

Combining technologies is becoming more common. Many users have Ethernet backbones (repeater networks) to leverage combining different technologies. Some users may use dual-port Ethernet radios to bring both gas flow and pump-off control back to one host through a single radio system. Others may have older serial radio technologies and are slowly migrating to new, faster, more secure digital technologies. In either case, combining these technologies with one Ethernet backbone can prolong the use of an existing system while creating a migration path for the future. ■

Jim Gardner is the oil and gas team leader for FreeWave Technologies. Prior to joining FreeWave, Gardner was vice president at Remote Operating Systems. E-mail comments to Gardner at jgardner@freewave.com.



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Hong Kong *Presents a* Data Tutorial

Mainland China learns about the Hong Kong Police Force's mission-critical communications systems and future plans.

Photo courtesy EADS

By Jolly Wong

Most Chinese police wireless communications systems used in provinces and autonomous regions are still analog MPT 1327 networks, with a few exceptions in major cities such as Beijing and Shanghai, both of which operate TETRA technology. In addition, Shenzhen is preparing a tender for system replacement.

Public-safety agencies in China are keen to see an extended range of applications, in particular data applications supporting the delivery of more information to field teams. TETRA Enhanced Data Services (TEDS) promises improved services across a range of channel bandwidths and a range of data formats, with a maximum data rate up to 518 kilobits per second (kbps).

TEDS-ready infrastructure and handheld devices have good prospects in the huge China mainland market. TEDS technology remains, however, a risk because the technology has had only a short time to demonstrate killer applications. Against the worst economic backdrop for generations, perhaps the biggest challenge for public-safety agencies in China is securing adequate funding to renew their mission-critical communications facilities.

Chinese Officials Learn Details

I visited Beijing and spoke 14 – 15 July to about 90 officials, mostly ranked as vice directors. The officials are in charge of the departments of wireless communications for provinces and autonomous regions in mainland China. The visit was on the invitation of the 22nd Public Security Bureau of the Ministry of Public Security (MPS).

The purpose of the visit was to share personal and working experiences, knowledge and best practices in relation to planning, design, application and management of wireless communications systems for law enforcement. The presentations introduced several successful case studies of applying wireless communications technology in Hong Kong to support daily police work and during major events.

MA Xiaodong, chief engineer, convened the seminar. The three lectures primarily covered the following topics:

- Status of mobile communications systems in the Hong Kong Police Force (HKPF);
- A successful case study of wireless communications systems to handle major events and ad hoc natural disasters; and
- A development strategy of wireless communications systems.

The lectures were well received, especially in the areas of project management and risk management. Officials raised questions mainly related to applications, in particular the use of data communications.

About the HKPF

Following is some of the information delivered in the presentations specific to the HKPF. The force is the largest governmental department with an annual budget of HK$11 billion (US$1.4 billion) and more than 31,000 staff. Professional mobile radio (PMR) is one of three branches of HKPF's information systems, communications branch, along with telecommunications and electronics, and operations services and support.

The agency's Third Generation Command and Control Communications System (CC3) integrates IT and telecommunications systems. The mission-critical system handles emergency calls and incidents and dispatches and manages police resources. The system includes more than 10,000 portable radios, 750 terminals, 300 MDTs in vehicles and 7,000 Command and

Control Computer System (CACCS3) users from headquarters, regional command-and-control centers (RCCC), emergency call-takers and others.

The HKPF's integrated communications system (ICS) is a TETRA digital encrypted radio system for communications between front-line officers of different formations and RCCCs. It includes data and voice and handles about 60,000 calls daily. The force's 999 emergency telephone systems include a dedicated private automated branch exchange (PABX) system for 999 calls for three RCCCs. It enables 999 call overflow to other RCCCs. Automatic number/location identification (ANI/ALI) technology is included, and the network handles about 80,000 incidents per month.

The CACCS3 is a CAD system that also integrates ANI/ALI technology, the ICS radio system, mobile computing system (MCS) and AVL/geographic information system (GIS) technology. The network interfaces with other governmental and HKPF systems, such as transportation and marine networks.

A 999 caller's position, incident location and HKPF vehicle locations are displayed on a digital map through the AVL/GIS system. GPS technology is installed in selected police vehicles. Officers also have access to mobile computing and messaging, including text messaging through portable radios and MDT terminals. About 38,000 messages are sent per month. Officers also make about 4,000 monthly database enquiries each month.

HKPF's latest projects include deployment and maintenance of AVL equipment. In addition, deployment of the Unified Digital Communication Platform (UDCP) is under way to help the force be prepared for disasters and terrorist threats. The concept of UDCP is a unified communications platform for government services to take on interoperability benefits built on CC3.

The system will allow the agency to share common resources — frequencies, base stations, equipment — to improve efficiency and enhance interoperability. UDCP is built on open standards technology, offers territory-wide coverage, and includes a software upgrade to SR6.1 and Group Cipher Key (GCK) encryption to facilitate secure partitioning.

Indoor coverage enhancement for 59 locations, including Hong Kong International Airport (HKIA), is also in progress. Technical solutions include gateway repeaters, bidirectional amplifiers (BDAs) and cell sites. Future development will include extending CC3 coverage to additional strategic locations riding existing mobile cellular operators' indoor infrastructure. ■

Jolly Wong is the chief police telecommunications engineer with the Hong Kong Police Force (HKPF), serving as head of the communications branch. He is an editorial advisor to *RadioResource International*. E-mail comments to editor@RRMediaGroup.com.

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www.skysweep.com

Mobile and Portable Radios

In this issue, we look at a variety of mobile and portable radios. For more information on a product, please contact the appropriate company via its Web site at the end of each listing. Be sure to mention that you found the information in *RadioResource International* magazine.

Abell Industries

The A-81 is a handheld two-way radio that operates in the 136 – 174 MHz VHF and the 400 – 470 MHz UHF frequencies. The radio features 128 channels, 5 watts RF power (UHF/VHF), VOX, 1.6 ampere-hour (Ah) Li-ion battery and rapid charger. With an IP67 waterproof rating, the radio offers two-/five-tone, DTMF and push-to-talk identification (PTT-ID). Components include four-layer turmeric print circuit board (PCB), Renesas central processing unit (CPU), NDK crystal oscillator, Toshiba amplifier, Fujitsu phase locked loop (PLL), KDS filter and Foster speaker.

www.abell.com.cn

ComGroup Australia

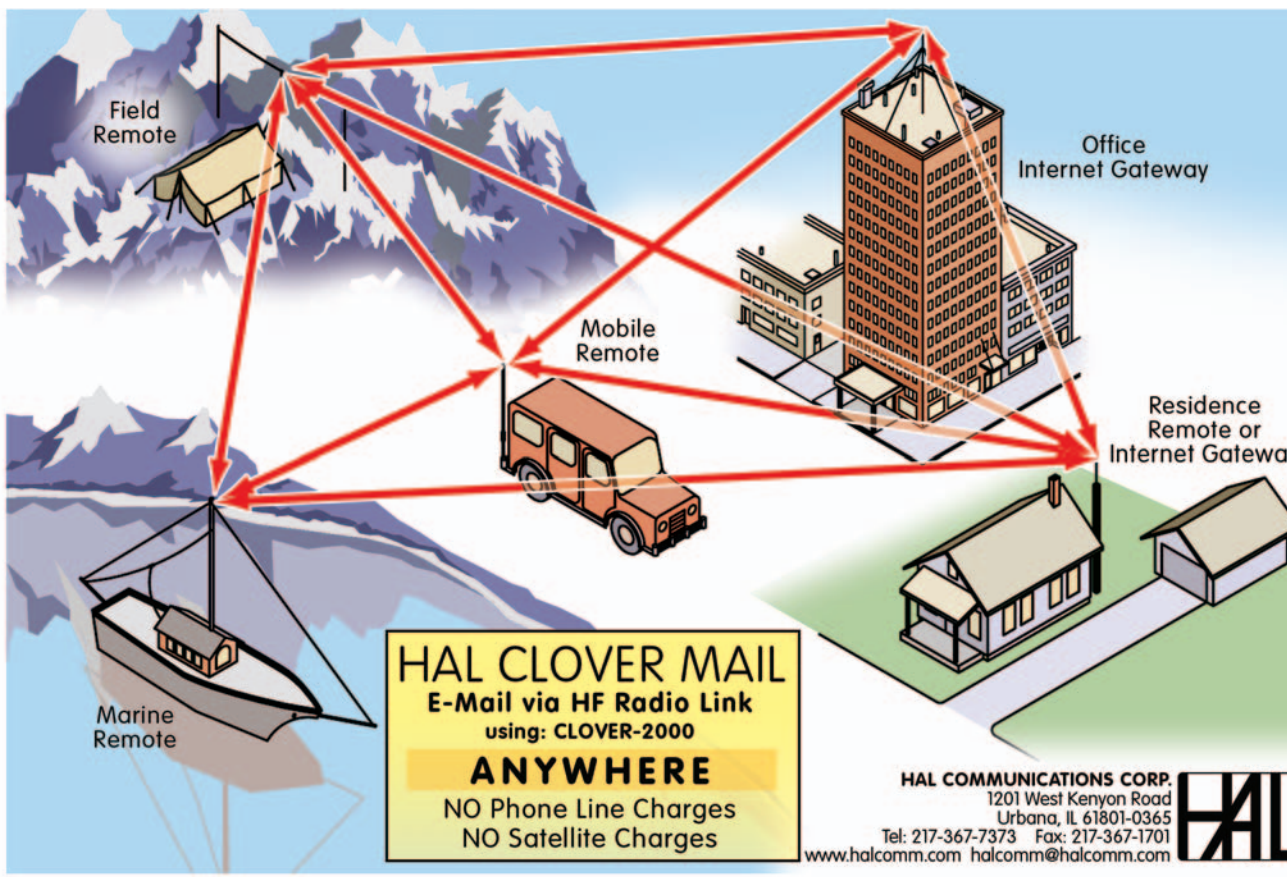
The Simoco SRP9180 radio is based on the existing SRP9100 series Xmode platform. Available in various frequency bands, the portable features a large, bright LCD display, multipin side accessory connector, IP67 environment rating, as well as Xmode operation in analog, MPT trunked, Project 25 (P25) conventional and trunked modes on one platform.

The Simoco SRM9000 mobile radio has evolved to address the needs of diverse markets from simple voice to advanced system applications, company officials said. The radio features Xmode operation, which includes analog, MPT trunked, P25 conventional and trunked modes. The radio's ruggedized and heavy-duty construction makes it reliable and suitable for all vehicle types, officials said.

www.simoco.com.au

Datron World Communications

The Guardian II portable radio series features options needed to ensure seamless interoperability for vital communications, company officials said. The triband portable offers a quick solution when multiple agencies operating on different frequencies are deployed, officials said.



Keypad programming, interoperability with all frequency bands and audio quality that uses the AMBE+2 vocoder combine to provide first responder, federal agency or public-safety users with Project 25 (P25) digital and analog communications.
www.dtwc.com

EADS Defence & Security

The THR9 TETRA handheld radio features a large quarter video graphics array (QVGA) display that offers information in both standby mode and during operation. While on the move, users can navigate accurately, query databases and create reports, all supported by the display and Java application platform, EADS executives said. The radio features battery connection mechanism and two battery options, and the extended battery offers a 3.8 ampere-hour (Ah) capacity.

www.eads.com

EF Johnson Technologies

EF Johnson Technologies announced a TDMA option for the ES series of Project 25 (P25)-compliant portable and mobile radios. The radios also feature interoperability with P25 trunked and conventional modes and SmartNet/SmartZone. Specifically designed for public safety, the radios offer digital audio with the enhanced AMBE+2 P25 vocoder, company officials said.

www.efjohnson.com

Harris Public Safety and Professional Communications (PSPC)

The P7300 is a feature-rich, single-band portable radio that delivers end-to-end encrypted digital voice and data communications. The portable can host multiple operating modes including Project 25 (P25) trunked and digital conventional, as well as conventional analog and Harris' Enhanced Digital Access Communications System (EDACS) or Provoice trunking. As a software-defined radio, it can include all of the modes of operation, several of the modes or just one. The radio provides users in the VHF and UHF bands with the capability to upgrade to P25 Phase 2.

www.harris.com

Harris RF Communications

The Unity XG-100 radio was designed to deliver interoperable communications among federal, state and local agencies communicating on analog or digital frequencies. The radio offers full-spectrum frequency coverage from 136 – 870 MHz and operates in four public-safety frequency bands: VHF, UHF, 700 and 800 MHz. Compliant with

The authority for TETRA networks and radio equipment

No matter if you want to test your network coverage, quality of service, network and mobile station interoperability, network load or simply the quality of radio terminals, you want to check out Willtek's TETRA product portfolio. Repair technicians rely on Willtek's equipment, reflecting more than 25 years of experience in PMR testing and more than 10 years with TETRA under the Schlumberger, Wavetek, Acterna, Willtek brands.

Don't leave your network and radio terminal quality to chance! Consult a sales engineer at info@willtek.com. Or visit our website:

www.willtek.com/tetra

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Phase 1 of the Project 25 (P25) standard, the radio is upgradeable to support evolving P25 standards. Built-in advanced capabilities include noise suppression, GPS tracking and Bluetooth technology for wireless operation.
www.rfcomm.harris.com

Holzberg Communications

Model DB-ANDY is a dualband, compact portable radio that operates in 136 – 174 and 420 – 490 MHz. The radio features 4

watts and 100 channels, and comes complete with Rapid Rate Desktop Charger, 1.5 ampere-hour (Ah) Li-ion battery, antenna and belt clip. Other features include priority scan, wide/narrow bandwidth, FM radio, dualwatch operation, alphanumeric display, CTCSS/DCS, voice scrambler, built-in VOX function, busy channel lockout and alarm function. Optional accessories include a heavy-duty remote speaker microphone, two-wire acoustic tube kit with microphone and earphone, and leather and nylon carrying cases.
www.holzberg.com

Icom

Icom IC-F5020/F6020 series comprises 128-channel professional mobile radios for the analog conventional market. The radios feature multiple signaling protocols including two-/five-tone, CTCSS, DTCS and basic MDC-1200 capabilities. Additional features include an alphanumeric

LCD, 4-watt front-mounted speaker, enhanced scanning and lone-worker functions. An optional accessory cable offers external memory channel control and ignition sensing. The mobile radios were designed for small- to mid-sized businesses and industry users.
www.icom.co.jp/world

Kenwood Japan

Kenwood's TK-7302(H)/8302(H) radio delivers mobile performance with extra wideband coverage (UHF: 70 megahertz), Kenwood executives said. The radio fea-

tures a built-in MDC-1200, QT/DQT signaling, multiple scan functions and a voice inversion scrambler. A D-sub 15-pin terminal allows for the simple connection of various types of external equipment. The IP54-rated and military standard-compliant radio provides high-quality audio, voice announcement and a large display with adjustable brightness for operation during the day and night, executives said.
www.kenwood.com

Kirisun Electronics

The PT8000 professional mobile radio meets military standards and includes UHF

or VHF. The radio features either-channel capacity, 12.5-/25-kilohertz space, CTCSS/DCS/DTMF encoder and decoder, push-to-talk identification (PTT ID), lone worker, emergency alarm, talk around, remote background monitor, remote killing and power-on self inspection.
www.kirisun.com

Klein Electronics

The Blackbox+ series professional two-way radio comes in a palm-sized, com-

pact design with all metal chassis. The IP54 water resistant rated radio features 4 watt, UHF, 16 channels with scan, two-tone encode/decode, VOX, voice enunciation for each channel, programmable buttons, high/low power switchable and busy channel lockout. Other features offered include time-out timer (TOT), priority scan, 50 CTCSS and 104 CDCSS.
www.blackboxradios.com

Niros Communications

The Niros TRX 5000 series is an intrinsically safe radio that features a customized user interface, intuitive menu structure, and atmosphere explosive (ATEX) or non-ATEX. The radio secures reliable communications in the most extreme conditions, officials said. Through the user interface, the keys can be customized with optional functions and settings as well as channel

spacing and channel steps, and users can choose between four or 16 keys. The radios, which are available in different colors for various purposes, have several frequency bands and advanced tone systems.
www.niros.com

Relm Wireless

The KNG M150 is a mobile radio in the Project 25 (P25) digital product line. Operating in the VHF band, 136 – 174 MHz, the radio features touchscreen operations. The radio is also available in a 100-watt high-power configuration that extends the radio's reach, Relm executives said. The radio will be upgradeable to P25 trunking.
www.relm.com

Sepura

The STP8000 hand-portable TETRA radio has been designed to function in physically challenging environments where public safety, military, transport and utility workers demand ruggedness and durability, Sepura executives said. The radio features

enhanced RF power, loud audio and a magnesium alloy chassis, combined with IP55 water and dust resistance. The radio offers 1.8 watts RF power, a large color screen that provides visibility in all lighting conditions, and man-down sensor, which triggers an alert when the radio detects non-typical user movement.

Sepura's SRG3900 is a fully featured TETRA mobile radio that is hardware ready to support direct mode gateway, direct mode repeater, PEI-based data and E2EE options. The radio offers 10 watts of RF power, is tamper protected and has smart-card-based E2E encryption options. Installation options include transceiver only, dual console, virtual console and handset-based console.
www.sepura.com

Teltronic

The HTT-500 handheld features 3 watts of RF output for improved coverage, 1 watt of audio and more than 18 hours of battery power. The handheld is ready for features such as Bluetooth connectivity, a tamper-proof E2EE module, a WAP browser, GPS and man-down capability. The radio is small and lightweight. The graphical color interface is easy to learn and efficient in emergencies, Teltronic officials said.

www.teltronic.es

Thales Communications

Thales Communications' Liberty multiband LMR became the first FCC-approved multiband radio covering the entire public-safety spectrum, company executives said. The single portable radio enables interoperability across many public-safety bands, 136 – 174, 380 – 520, 700 and 800 MHz. The radio provides all modes standardized for public-safety use, including analog FM and Project 25 (P25) conventional and trunked, as well as full encryption capabilities, including data encryption standard (DES), advanced encryption standard (AES) and over-the-air rekeying (OTAR).

www.thalesliberty.com

Unimo Technology

Unimo's rugged 16-channel handheld radio, the PX series, supports three frequency bands. The radio features Li-ion batteries, enhanced dual push to talk (PTT), battery-gauge LED, scrambler and descrambler, remote stun and revive, emergency function, two-pin audio connector, high-quality audio output, noise reduction by compander and advanced speaker protection technology. The rugged radio can endure a car driving on it, Unimo officials said. An IP67 waterproof version is also available.

www.unimo.co.kr/eng

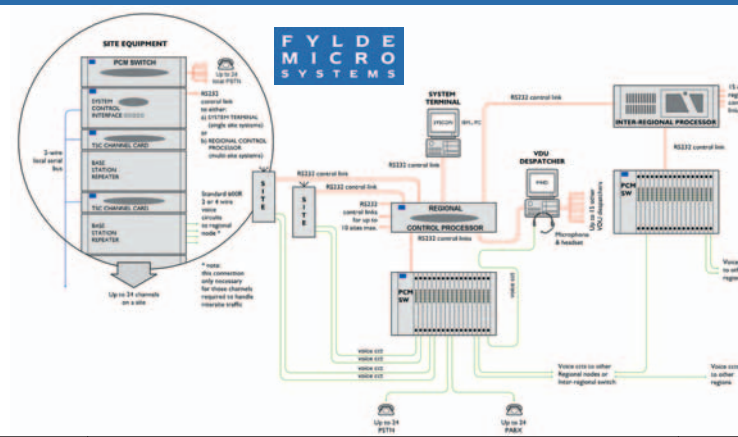
Vertex Standard

The VX-230 series is a portable radio that features a 16-channel capacity, two programmable keys, and emergency and lone-worker safety signaling. Other features include DTMF automatic number identification (ANI), DTMF speed dial, battery power save, audible/visual low battery alert, manual squelch adjustment, and two-/five-tone encode and decode. The frequency ranges in one radio with no sub-bands are 134 – 174 and 450 – 512 MHz. The radio also includes scanning options, priority, dual watch, follow me and talk around. Li-ion and NiMH battery power options are available.

www.vertexstandard.com

MPT-1327 Trunking — Alive and In Color

System Overview-Single Site to Nationwide System



Motorola Kenwood Tait
Radios and Base Stations

System Design and Integration

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Contact: Charles A. DeVito • E-mail: devito@radioandtrunking.com

Motorola Kenwood Tait
Radios and Base Stations

New Products

TETRA Switch

The Dimetra LiTE by **Motorola** builds on the company's Dimetra IP line of TETRA products and supports integrated voice and data services and full-duplex IP telephony calls. The switch provides an interface to conventional analog systems, making it suited for operators upgrading from analog to digital networks that require smooth migration paths, company officials said. The switch uses a range of TETRA base stations, and the radio site is linked to Dimetra LiTE using a standard Ethernet interface.

Motorola also introduced Capacity Plus, a single-site digital trunking software to expand the capacity of the MOTOTRBO professional digital two-way radio system. The software enables users to share voice and data communications or a combination of both on the same digital system without requiring new frequencies. The product features the Repeater Diagnostic and Control application, systemwide calling capability and TDMA digital technology.

www.motorola.com

Handset-Based Console

The Handset-Based Console (HBC) is **Sepura**'s latest mobile radio equipment

option that combines the functionality of the traditional radio console and telephone handset to free up dashboard space, company officials said. The console can coexist with legacy analog equipment, allowing users to retain and operate on old analog radio networks in areas where TETRA is still being rolled out.

Sepura also released a software application to help police officers carry out "stop-and-account" operations, which requires officers to record the time, location and ethnicity of people stopped, more swiftly and efficiently. The application transforms the ethnicity data into a short data application (SDA) message, while also sending GPS location and time stamping directly to a central database. The application was developed for the SRH handheld and the STP handportable TETRA radios.

www.sepura.com

HF Systems

Codan unveiled the MRX series of high frequency (HF) radio systems that feature an integrated deployment package to support remote communications

including secure voice transmission, e-mail, fax, GPS, tracking and telephone support. The self-contained system provides interoperability to any combination of HF, VHF and UHF radio networks, Codan executives said. The series supports 125-, 500- and 1,000-watt peak envelope power (PEP) operation and is interfaced for fully automatic operations with the NGT SR series of HF transceivers. The network features Split Site Operation, which eliminates co-site interference.

www.codan.com.au

Indoor TETRA Repeater

European Telecommunications S.A. (ETSA) presented a new generation of repeaters dedicated to indoor TETRA radio coverage. The repeater features a volume of 2L and power consumption of less than 30 watts. The small repeater

can be used with a TETRA output power of more than 25 dBm with one carrier or more than 19 dBm with two

carriers. The repeater supports hypertext transfer protocol (HTTP), single site management protocol (SNMP) and teletype network (TELNET) protocols.
www.etsa.fr

RF Quadrature Modulator

CML Microcircuits introduced the CMX993W wideband RF inphase/quadrature (I/Q) modulator for wideband wireless infrastructure systems requiring high-performance I/Q modulation. The modulator offers 30 MHz to 1 GHz operation with wideband noise performance across multiple modulations and bandwidths. The product provides translation from baseband I/Q signals to a modulated RF signal, and the wideband input can be driven single-ended or differentially. Other features include gain control, uncommitted differential amplifiers, a digital control interface and a session initiation protocol (SIP)-compatible interface.

www.cmlmicro.com

Solar Controller

The Microcon SC12V10 solar controller from **Imark Communications** is for use with low-power remote solar systems. The controller is a series regulator that features switch-mode technology and metal-oxide semiconductor field-effect transistor (MOSFET) power components. The product features connections for photovoltaic (PV) input, DC output and battery with all terminals rated at 10 ADC. Both 12 and 24 VDC versions are available. The controller offers a low battery voltage load disconnect function, over-voltage protection, a timer function and LEDs for status indication.

www.imark.com.au

Man-Down Application

Tait Radio Communications added Man-Down capability to the TP8100 radio for users working alone in hazardous environments. When the Man-Down motion/tilt sensor is installed, several programmable options can be selected, including the standard Lone Worker feature, to provide flexible configuration. A precision GPS speaker microphone is also an option for MPT 1327 trunked networks.
www.taitworld.com

Asset-Tracking Antenna

The heavy-duty GPSB antenna series from **Panorama Antennas** combines four different antennas into a sleek mounting device that only requires a single hole for mounting. The antenna is ideal for logistics and asset tracking, company officials

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said. The external UHF or VHF whip can be used as a simple two-way radio link with a hub. The UMTS antenna or GPRS antenna can be used for data feeds and mobile phone calls, and the GPS antenna can be used for navigation and vehicle tracking. And the WLAN antennas can download data back at the depot. The antenna will go into production in the first quarter of 2010.
www.panorama-antennas.com

Broadband Antenna

Heuermann HF-Technik (HHF) introduced

the BCM40, a broadband conical monopole antenna. The antenna features a broad frequency band (1.2 – 40 GHz), making it ideal for surveillance applications, HHF executives said. The antenna offers good matching, an antenna gain of 0 dBi, and robust casing allows for indoor and outdoor use even in moist conditions.
www.hhft.de

TETRA Testing Software

Willtek Communications released the Lector test automation software that now supports TETRA radio testing, in addition to simplifying GSM, W-CDMA and CDMA2000 handset testing. A basic version of the software is available free for download from the company's Web site,

and enhanced versions are available that provide features and functionality required for more demanding testing applications. The software can automate daily testing of TETRA terminals and can generate and store test reports in line with ISO-9000 documentation requirements.
www.willtek.com

Enhanced VPN Software

Version 8.51 of Mobility XE mobile virtual private network (VPN) software from **NetMotion Wireless** supports more than 30 languages. The version supports the use of character sets commonly found in most European languages to allow IT administrators and end users to use their native languages for specifying user names, passwords, resources and rule sets. The software also now supports Microsoft SQL Server 2008 and 2005 SP3. The software enables mobile users to maintain secure connections to applications when moving through wireless coverage gaps and across various networks. The Mobile Analytics module facilitates comprehensive reporting on the mobile performance status of all individual applications, devices and users within a mobile deployment with more than 20 pre-configured and customizable reports.
www.netmotionwireless.com

Crime Analysis Software

GeoComm released GeoLynx CrimeAnalyst as a law-enforcement tool to geographically define criminal activities to detect patterns and trends and make intelligent policing decisions based on actionable data, GeoComm executives said. The product has tools for linking time with space for statistical analysis, visualizing criminal routes to track offenders, identifying repeat incidents, address matching to locate incidents, hot-spot density mapping, automating crime statistics, managing and saving standard queries, and comparing cases with similar characteristics.
www.geo-comm.com

Voting Tone Encoder

Midian Electronics released the VTE-1 voting tone encoder (pilot tone generator). The encoder has a built-in 600-ohm line driver and interfaces a radio receiver with

an analog voting comparator to create an analog satellite-voting receiver. The product looks at the carrier-operated relay (COR) coming from the receiver. When COR is inactive, the encoder generates a user-selectable voting tone to the voting comparator. When the receiver's COR is active, the tone is no longer generated, and audio from the radio is sent to the voting comparator.
www.midians.com

Events

For more events, visit RRImag.com

26 – 28 October: Maritime Surveillance Latin America, Miami, USA. Institute for Defense and Government Advancement (IDGA): info@idga.org, www.maritimelatam.com

3 – 5 November: ID World International Congress, Milan. Wise Media: +39 02 8903 4100, idworld@wisemedia.com, www.idworldonline.com

3 – 6 November: EUTC 2009, Budapest, Hungary. European Utilities Telecom Council (EUTC): +32 2 645 2677, www.eutc2009.utc.org/content/eutc-2009

12 – 14 November: Port International India, Mumbai, India. E.J. Krause & Associates: +1 301 493 5500, info@ejkrause.com, www.portinternationalindia.com

17 – 20 November: Milipol Paris, Paris. Milipol: +33 1 7677 1314, www.milipol.com

24 – 26 November: PMRExpo 2009, Cologne, Germany. EMW Exhibition & Marketing Wehrestedt: info@wehrestedt.org, www.pmrexpo.com

30 November – 4 December: IEEE Global Communications Conference (IEEE GLOBECOM 2009), Honolulu, Hawaii, USA. IEEE Communications Society: h.sweeney@comsoc.org, www.ieee-globecom.org/2009

3 – 5 December: International Conference on Antennas, Propagation and Systems (IEEE INAS 2009), Johor Bahru, Malaysia. IEEE Malaysia: Mazlina Esa, +60 7 5535262, mazlina@fke.utm.my, www.fke.utm.my/inas2009

8 – 9 December: Conference on Global Preparedness, Melbourne, Florida, USA. Global Center for Preparedness: +1 321 674 8342, cgpinfo@fit.edu, 411.fit.edu/cgp

2010

1 – 4 March: ITU Telecom Americas 2010, Buenos Aires, Argentina. International Telecommunication Union (ITU): +41 22 730 6161, www.itu.int/americas2010

10 – 12 March: IWCE 2010, Las Vegas, USA. Penton Media: Stacey Orlick, +1 203 358 3777, stacey.orlick@penton.com, www.iwceexpo.com

6 – 9 April: IEEE Dynamic Spectrum Access Networks (DySPAN), Singapore. IEEE Communications Society: h.sweeney@comsoc.org, www.ieee-dyspan.org/2010

18 – 21 April: Wireless Communications and Networking Conference (IEEE WCNC 2010), Sydney. IEEE Communications Society: www.ieee-wcnc.org/2010

21 – 23 April: BAPCO 2010, London. British Association of Public-Safety Communications Officers (BAPCO): www.bapco.co.uk

5 – 6 May: RadComms2010, Melbourne, Australia. Australian Communications and Media Authority: Donald Robertson, +02 9334 7980, www.acma.gov.au

23 – 27 May: IEEE International Conference on Communications (IEEE ICC 2010), Cape Town, South Africa. IEEE Communications Society: h.sweeney@comsoc.org, www.ieee-icc.org/2010

25 – 28 May: TETRA World Congress 2010, Singapore. TETRA World Congress: +44 20 7017 7878, enquiries@tetraworldcongress.com, www.tetraworldcongress.com

1 – 5 August: APCO Conference and Exposition, Houston, USA. Association of Public-Safety Communications Officials International: www.apco911.org

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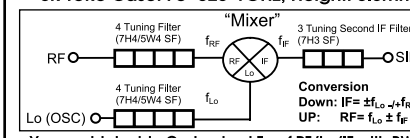

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TTW3537F-1441M	1401~1450M	34M	4.0
TTW3539E-1489M	1451~1500M	34M	4.0
TTW3588B-1575M	1551~1600M	40M	4.0
TTW3527F-1747.5M	1701~1750M	69M	3.0
TTW3529E-1842.5M	1801~1850M	70M	3.0
TTW3720B1-2125M	2101~2150M	35M	4.0
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TTW3840B-2450M	2401~2450M	175M	3.0
TTW3841B-2500M	2451~2500M	190M	3.0
TTW3875B-2583M	2551~2600M	140M	2.5
TFW4647F-1950M	1901~1950M	84M	4.0
TFW4624E-2140M	2101~2150M	86M	3.5
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TF64128B1-247.5M	246~275M	5M	4.5
TF69322B1-325M	311~355M	8M	4.5
TF64239F-370M	356~400M	16M	3.0
TF69466F-400M	356~400M	16M	3.5
TF64234E-450M	401~455M	15M	3.5
TF64236F-460M	456~515M	15M	4.0
TF64232E-490M	456~515M	15M	3.5
TF64233F-520M	516~555M	15M	3.5
TF69844F-630M	596~640M	18M	3.5
TF69845F-680M	661~700M	20M	3.5
TF69648F-790M	751~800M	25M	3.5
TF69555E-835M	831~860M	25M	4.0
TF69550F-915M	901~930M	27M	3.5
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VHF · UHF Toko Case K4R 4 Tunning (EX) For RF/Lo

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K4RF-360M-20M	351~370M	4.0	K4RF-705M-20M	695~715M	4.5
K4RF-380M-20M	371~390M	4.0	K4RF-735M-20M	725~745M	4.5
K4RF-400M-18M	391~409M	4.0	K4RF-800M-20M	790~810M	4.5
K4RF-420M-18M	411~430M	4.0	K4RF-830M-20M	820~840M	4.5
K4RF-440M-18M	431~450M	4.0	K4RF-880M-20M	870~890M	4.5
K4RF-460M-18M	451~470M	4.0	K4RF-945M-20M	935~955M	5.0
K4RF-480M-18M	471~489M	4.0	K4RF-980M-20M	970~990M	4.5
K4RF-495M-20M	485~505M	4.0	K4RF-1010M-20M	1000~1020M	5.0
K4RF-515M-20M	506~525M	4.0	K4RF-1055M-20M	1045~1065M	5.0
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TT67183B-235M	221~245M	17M	2.5
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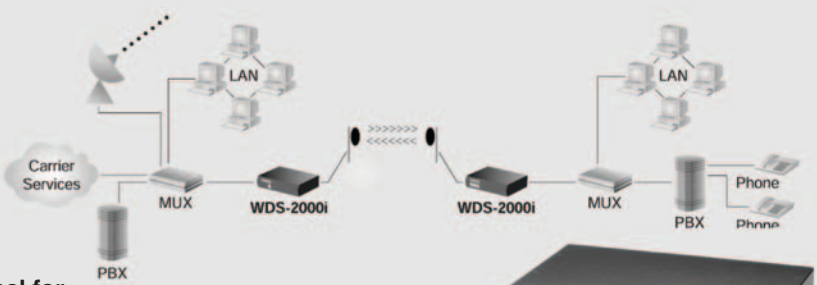

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❑ B Distributor, Agent, Importer, Exporter, Rep
❑ C Commercial Trunked Radio and Other Wireless Service Providers
❑ D Government/Public Safety/Military
❑ E Business/Industrial/Transportation User
❑ F Communications Manufacturer/OEM/Software Developer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

3. What is your function?
❑ A Corporate 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 radio communications equipment or services?
❑ A Yes ❑ B No

5. Is there any servicing of radio equipment at your location?
❑ A Yes ❑ B No

6. In what area of the world do you do most of your business? (mark only one)
❑ A Western Europe
❑ B Eastern Europe
❑ C Middle East
❑ D Asia
❑ E Australia/New Zealand
❑ F Africa
❑ G Mexico/Central and South America
❑ H United States/Canada
❑ Z Other _____

7. What wireless technologies does your organization plan to use/buy over the next 2 years? (check all that apply)
❑ A Conventional Two-Way
❑ B Cellular/Personal Communications
❑ C Paging/Messaging
❑ D Mobile Data
❑ E SCADA/Telemetry
❑ F Microwave radio
❑ G Trunking
❑ H Location Technologies
❑ I Tone Signaling (ANI, Encryption, etc.)
❑ J Interconnect
❑ K Satellite
❑ L CAD
❑ M Wireless Broadband
❑ Z Other _____

Q409

New Network Helps Hungary Take on Schengen Duties

By Béla Kozma

Hungary, one of the European Union's (EU) newest members, is meeting its responsibilities as a border state by enforcing the Schengen area — 25 European countries that allow the free movement of travelers — with the help of its expanded TETRA network. Hungary has extended and improved its Egységes Digitális Rádiótávközl rendszer (EDR) TETRA network to make patrolling the Schengen border easier.

The network began operation in early 2007, and network provider Pro-M Zrt added seven base stations in the border areas for better coverage. The changes were needed to support the merger of the border guards and the police and to increase network coverage and capacity at high-priority sections of the border. The EADS-supplied network also serves fire, ambulance, customs, armed forces, prison guards and security services. Covering more than 94 percent of the country, using four exchanges and nearly 261 base stations, the network will eventually serve 42,000 subscribers, with 33,000 current users.

Training personnel to use such an extensive system was a major task; at least 11 organizations planned to use it to improve operations. The training regime centered on a countrywide road show and involved 12 training sessions in 19 cities, spread over five months with more than 1,100 public-safety attendees taking part. The sessions included presentations on the general network, advantages of TETRA technology, and on detailed operation of radio terminals and AVL systems. Pro-M also organized a fast, user-friendly online training service called e-Learning accessed through the Pro-M portal.

Public-safety simulation practices are important as well, with the goals of harmonizing international cooperation between ambulances and fire brigades to practice fluent and smooth disaster prevention. One of the largest training exercises held this year involved representatives from seven countries with 160 special rescuers, numerous observers, coordinating professionals and role players.

Pro-M supported the training and users with a mobile base station installation and its support portfolio. The installation secured the training's effective communications flow during the simulated accidents and disasters. The exercises, such as fighting forest fires, water and chemical rescues, and evacuations, were situations in which the rescue teams had to cooperate far from the disaster locations or control points. These tasks tested the mobile base stations and their capacity in an expanded communications situation. Similar practical training is useful to test services and new applications and to receive users' immediate feedback.

The North Atlantic Treaty Organization (NATO) summit held 9 – 10 October, 2008, was Hungary's greatest diplomatic event. The ministers of the 26 NATO member states and the defense leaders of the countries participating in the organization's actions were present. Because the event drew some 700 people to Budapest, security alertness required unprecedented preparedness. The EDR radio system had already proved its eligibility and smooth operation many times in similar security situations.

After the preliminary assessment of user demand, Pro-M provided advanced applications to support public-safety services. Installing fixed and mobile units solved the expansion of radio traffic in Budapest. In addition to increasing the capacity of the 13 base stations operating in the area, the company built another base station that enabled the radio system to increase capacity by 50 percent. The company also installed a mobile base station that provided better support to the network at the Mujégpálya ground.

As the result of preparation, according to Pro-M's statistics, none of the base stations' load exceeded 50 percent during the two days of the summit. No calls had to wait during the event because resources were immediately available. Pro-M's customer services did not receive notice or error reports regarding the event.

With the EDR in operation for nearly two years, users were asked for their opinions of the network. Users generally had a positive view of Pro-M, and most people said the EDR network works better than the previous analog system. The old system suffered from typical problems, including not being unified countrywide, difficultly obtaining spare parts and no common way to communicate between agencies. When asked what further developments could be implemented to enhance the network and its usability, training and AVL applications were most frequently mentioned. AVL and GPS location services were piloted, and now these applications are in use, helping the everyday operation of public-safety entities. ■

Béla Kozma is the CEO of Pro-M Zrt and has worked in Magyar Telekom and its predecessors for more than 20 years. Pro-M is a member of Magyar Telekom Group, part of Deutsche Telekom, and is responsible for operating the Hungarian TETRA system. E-mail comments to kozma.bela@pro-m.hu.

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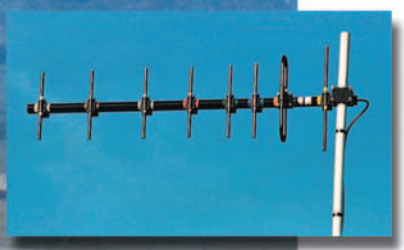

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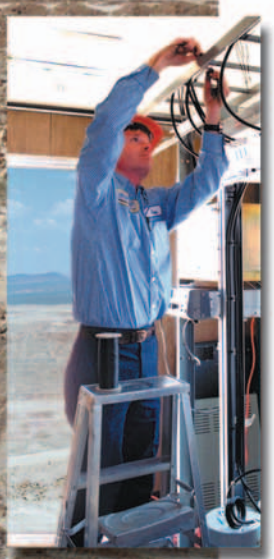

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