Land mobile radios and public safety IT: Part II

By Brad Brewer

The recent International Wireless Communications Expo (IWCE) in Las Vegas was a huge success with all land-based radio system vendors. For law enforcement personnel who were there to evaluate and decide which system was best for them, it was an easy task given the variety. All the big names in mobile radio were there, and Voice over IP (VoIP), P25 compliance and interoperability were among the consistent themes. Paramount among all vendors at IWCE was interoperability, and rightly so, as public safety communications interoperability has been identified by Congress, the National Governor's Association, the U.S. Conference of Mayors and the 9/11 Commission as an urgent national priority and is a principal focus of the Department of Homeland Security.

APCO Project 25 is the technical standard for digital public safety radio communications developed by the Association of Public Safety Communications Officials (APCO). So when these vendors talk interoperability, they're serious. The equipment available today offers so much more than what was offered a few years ago. Just something as simple as being able to use any vendor's portable radio on a single land-based system is a huge departure from what we have seen previously.

Project 25 and 700 MHz spectrum reallocation are all part of the new land-based radio future for law enforcement. In Part II of our land mobile radio review, we look at some of the latest and greatest from a few seasoned vendors who have been around for some time and offer a range of products that rival anyone in the market.

EFJohnson Technologies Inc.

EFJohnson Technologies Inc. is headquartered in Irving, TX and focuses on developing high-quality

www.efjohnsontechnologies.com

secure communications for public safety. The company introduced two products at the recent 2009 IWCE and was showing two others there for the first time.

The new Stargate Dispatch Console is the next generation in IP-based dispatch consoles for first responders. The StarGate console is specifically designed for Internet protocol (IP) control and connectivity in a Project 25 trunked or conventional environment. The development of this product is a result of some close interaction with public safety dispatchers. EFJohnson responded to the users, so the touchscreen graphic user interface (GUI) is designed with the dispatcher in mind. Minimal user intervention and simplicity must be paramount in any system with public safety. "StarGate is the next generation in IP-based dispatch consoles," said Michael Jalbert, president and chief executive officer of EFJohnson Technologies.

"Most of the dispatch consoles in use today are designed on platforms that are over 20 years old. We designed StarGate for IP control and connectivity in a Project 25 trunked and conventional environment."

StarGate provides a graceful migration path from analog to P25 that fits customer budgets and provides uninterrupted operations. Key features include easily reconfigurable user profiles and screens; best-in-class 20 watts per channel audio that supports up to 10 separate Bose® high-fidelity speakers; enhanced (AMBE+2) Project 25 Vocoder and audio processing engine; DES-OFB Multi Key and AES FIPS 140-2 voice encryption; and enhanced Request to Talk P25 Conventional call management.

Photo courtesy of EFJohnson

EFJohnson offers significant broadband wireless solutions. Its portfolio of wireless access points for outdoor, mobile and vehicular use meet rigorous U.S. government security standards, including FIPS 140-2 and FIPS 802.11, and are designed to provide force protection, critical infrastructure protection / management, and improve the efficiency of base operations. These rugged and reliable products are designed to government standards for harsh environmental conditions. Along with all broadband solutions being FIPS 140-2 validated, its subscriber radios have AES, DES-OFB and DES encryption algorithms.

In order to ease the pain of transition from legacy analog systems to the newer digital systems, EFJohnson's systems are completely backward compatible so legacy user equipment can be phased out as opposed to wholesale costly upgrades. Its subscriber radios operate in analog and digital, trunked and conventional modes. In addition, EFJohnson offers technical support by phone, technical training by course and by online modules via EFJ Customer Connection (its opt-in customer extranet). This offers any public safety customer significant advantages in scalability, value and investment protection. The company's conventional P25 infrastructure system offers trunked-like features at a fraction of the cost of a trunked system. All its infrastructure systems are IP-based. EFJohnson also announced Information Assurance for its IP25 systems offerings for first responders. Information Assurance is the process that the U.S. government has defined for ensuring that all IP-based networks meet a predefined standard of operational security. The Information Assurance solution will satisfy the components of network security, confidentiality, integrity and availability, so the same best-in-breed capabilities found in IT systems will be a part of the IP25 systems for first responders.

EFJohnson isn't just expanding its system portfolio but also its subscriber equipment. One innovation is the new Discover™ GPS Speaker Microphone. This GPS speaker microphone is excellent for coordinating field operations and seeing the location of group members in real time.

A large, backlit LCD screen provides an easy-to-use icon-based operation and allows for graphic representation of relative distance and direction to other team members. It also allows the user to send text messages and waypoints to groups, individuals or dispatch. Users can transmit highly accurate

Continued on page 7

continued from page 6

location data in a variety of ways: over analog or digital channels, clear or encrypted, with every push-to-talk or at predetermined time or distance intervals. The Discover™ GPS Speaker Microphone is compatible with a number of commercially available graphic and mapping applications for complete, real-time situational awareness and group coordination. The company also showed the Lightning™ Control Head for its award-winning 5300 ES Series Mobile Radio. This control head uses advanced electroluminescent display technology found in military aircraft instrumentation for a very bright, easy-to-read display at any angle.

Harris Corp.

Harris Corp., an international communications and information technology company based in Melbourne, FL, is offering its expertise in interoperable communications through the new Unity™ family of software-defined radios. Harris has annual revenue of $5.4 billion and 16,000 employees—including nearly 7,000 engineers and scientists—and is dedicated to developing best-in-class assured communications products, systems and services.

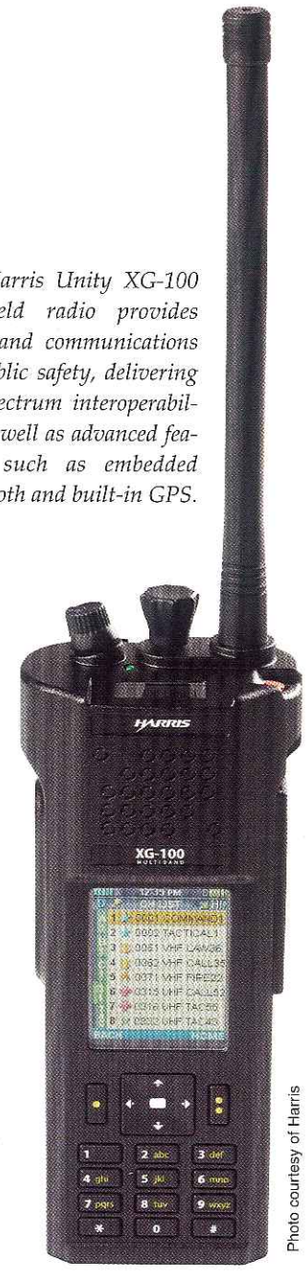
www.harris.com

Harris first entered the growing public safety / homeland security market in February 2008 with the RF-1033M—the first multiband radio targeting the needs of federal first responders. The Unity XG-100 expands on the capabilities of the RF-1033M and extends the frequency range to cover the 700/800 MHz bands.

At the recent IWCE exhibition in Las Vegas, Harris conducted its first live demonstration of the Unity™ XG-100, a multiband handheld radio designed to allow federal, state, local and tribal government agencies to communicate more effectively using a single radio. The Unity XG-100 is a portable land mobile radio (LMR) that covers public safety frequency bands from 136 to 870 MHz—delivering direct, full-spectrum, instantaneous interoperability for public safety communications.

"The Unity XG-100 is an advanced multiband radio that will provide public safety personnel with direct communications interoperability whenever and wherever necessary," said Dana Mehnert, president of Harris RF Communications. "As a result, federal, state and local first responders will be able to unify their efforts and provide a better, more coordinated response to emergencies."

The Unity XG-100 builds on Harris' heritage with the military and its leadership in software-defined, multiband handheld communication products that are used extensively around the world. The new radio is compliant with the Association of Public Safety Communications Officials (APCO) Project 25, the technical standard for digital public safety radio communications. The multiband capability of the Unity XG-100 will allow public safety agencies to easily upgrade to support evolving technical standards, future capabilities and changing mission requirements.



The Harris Unity XG-100 handheld radio provides multiband communications for public safety, delivering full-spectrum interoperability, as well as advanced features such as embedded Bluetooth and built-in GPS.

Photo courtesy of Harris

Photo courtesy of Kenwood

In March, Harris signed a memorandum of understanding with the Department of Public Safety, Monroe County, NY, a recognized leader in the performance evaluation and adoption of new technologies. The agreement calls for the Public Safety Department, which procures radios for every public safety agency in Monroe County, to provide feedback and evaluation of the Unity XG-100, as well as other Harris-developed public safety communications products. In addition, Harris has tests under way in several jurisdictions in the New York City metropolitan area. Earlier this year, the company was awarded a blanket purchase agreement to provide LMRs to the U.S. Departments of Interior, Agriculture, as well as the FBI Training Academy.

Interoperability in public safety has historically been achieved through an ancillary system of equipment. This system is required because today's land mobile radios are limited to single frequency bands, making it difficult for federal agencies and local public safety officials to talk to each other. The Unity XG-100 will enable emergency personnel to communicate directly without having to carry multiple radios or route transmissions through ad-hoc network bridges.

In April 2009, Harris announced that it had signed a definitive agreement to acquire the Tyco Electronics Wireless Systems business (formerly known as M/A-COM), an established provider of mission-critical wireless communications systems for law enforcement, fire and rescue, and public service organizations. This purchase of Tyco Electronics Wireless Systems creates a dynamic new organization that will provide end-to-end wireless network solutions to the growing $9 billion global land-mobile radio systems market.

Kenwood USA Corp.

Kenwood USA Corp., Communications Sector, based in Suwanee, GA, is a leader in mobile and portable two-way radios and custom systems. Kenwood focuses on equipment and systems primarily for voice and data that operate in the private land mobile two-way radio spectrum. For broadband wireless solutions on projects, according to Joe Watts, product manager at Kenwood, "There are many capable vendors offering established technologies we use as an integrated solution on specialized projects." Watts explained that emerging broadband technologies like WI-MAX do offer some exciting possibilities, and the market is likely to be dominated by commercial carriers. It's too early to tell how and to what extent, if any, two-way radio manufacturers will be able to participate, according to Watts.

www.kenwoodusa.com

Kenwood offers two-way voice and data systems for analog conventional and analog trunked (LTR®, MPT-1327, PassPort™) and digital (NEXEDGE™ /NXDN® and P25). They offer integrated medium-duty workforce mobile data and GPS AVL solutions with partner vendor hardware and software solution providers on specialized projects. "We have found video solutions, such as those for fixed security and in-car recording, are best handled by those [companies] that specialize in those segments," Watts commented.

NEXEDGE™ is the Kenwood brand for its digital radio systems using the NXDN® digital air interface. It is composed of a digital radio communications protocol using 4-Level FSK (4LFSK) modulation capable of operating on 12.5 and 6.25 kHz channel bandwidths. NXDN access methodology is classified as FDMA (Frequency Division Multiple Access). In addition, NEXEDGE uses the

Continued on page 8