

RadioResource

MissionCritical™

C O M M U N I C A T I O N S



U.S. Security Associates security guards communicate with radios, while logging bus numbers on a queue-style board when class dismisses each day at the Learning Corridor.

The Business Benefits of **DMR**

SMR operators and end users switch from analog to trunked Digital Mobile Radio (DMR) for enhanced mission-critical communications.

By Taryn Walker

SMR networks found life in 1979 when the FCC created policy to allow commercial sectors a chance at using land mobile communications. With advancements in digital technology, the Digital Mobile Radio (DMR) and other standards have renewed the market for SMR operators and their end users during the past few years.

Chief Technology Officer (CTO) Bruce Marcus of Marcus Communications, an SMR operator in Connecticut, has worked in the industry

for nearly 40 years, serving a customer base of 6,000 local radio users. Of that group, 2,000 radios have been upgraded, and he says switching from analog to digital has allowed for higher channel capacity and happier customers than with legacy networks. Specifically, Marcus Communications has built demand for XPT digital trunking from Hytera Communications during the past four years and is changing the way customers do business in not only fire and police, but

also urban engineering, medical, transportation, education and other vertical markets.

Education Security

The Learning Corridor comprises five magnet schools on a 345,000-square-foot campus in Hartford, Connecticut. The Learning Corridor is part of the Capitol Region Education Council (CREC) intradistrict that upgraded to a DMR one-site repeater network using Hytera's PD752



The Learning Corridor's 16-acre, five-magnet-school campus is in Hartford, Connecticut.

Photo courtesy Robert Benson

portable radios. Kevin McCrewell Sr. is the supervisor of security operations through U.S. Security Associates at the tuition-free schools that turn out thousands of pre-kindergarten to 12th grade students in the area. CREC is a customer on Marcus Communications' SMR network, and U.S. Security Associates is employed as the security vendor for the \$110 million campus that was built in 2000.

DMR, a standard defined by the European Telecommunications Standards Institute (ETSI), uses two-slot TDMA technology in a 12.5-kilohertz channel. Hytera's PD7 series DMR radios are designed to maximize channel usage while having an extra long battery life, and the radios have worked perfectly for the 11-person security staff at the Learning Corridor during the past eight months, McCrewell says.

With about 80 radios now and security guards always on the clock, communications have never been smoother, he says. Originally, security used one analog base station repeater about a mile away from the 16-acre campus. "We're in school buildings that are predominantly steel and brick, and naturally, they are inherently non-analog friendly," he says. "Consequently, there would often be a lot of repetitive modulation. People were not picking up words, sometimes you couldn't be heard at all, and that's a tough situation when you have a campus with 2,200 souls on it."

For McCrewell and his staff, it's

been like night and day since moving from analog, and the two biggest advantages of the new trunked DMR radios are not being able to talk over each other and having legitimate user identifiers.

"Using analog, people can easily talk over each other, and that was happening all the time," he says. "Talk-over noise, that gibberish where two people talk at once, can really hinder us. Now, the way these things are programmed, my radio says 'supervisor,' I turn it on and the system realizes I'm on. So, when I key up my mic, everyone knows who's talking, and I can also identify who's on which radio, and no one is interrupting."

With five magnet schools, students come to the campus from all over. There's a bus for every two bordering towns, and the security team uses a queue-style bus board to track buses each day. Someone always works the board at dismissal time. One guard will read incoming bus numbers to another guard while using his two-way radio, and the number is posted on the board to ease the process of children finding their buses for transportation. The narrowband digital platform has allowed the schools' security guards to communicate through traffic direction, locating students, access control and event monitoring — all without interference.

"This is as easy as having one person (guard) in the street, another somewhere else out of sight, and

they're relaying vital information," McCrewell says. "With different dismissal times, you've got to consider the logistics of communications. At this time, I've got a five-story parking garage and we've got our eyes on everything, making sure people can go in and out, and that our system is highly coordinated, taking into consideration there are as many as 1,000 students roaming around at one time."

One message not being heard or understood through a radio signal could greatly impact the safety of a user, not to mention the young lives trying to get to and from school. McCrewell says he has had no reports of signal drop off, only excellent modulation clarity. When it comes to medical-related incidents or tracking down students, all it takes is an efficient radio-in to an administrator, and that information is protected. DMR has freed teachers from landline phone calls or interruptions of intercom announcements and interference on all levels, he says.

Everyone is always looking for more ways to refine message security, McCrewell says. "Whether there are ones and zeros going across wire or air, it's hard to secure over wire, and that's why SMR is important to us. Using this DMR technology, information can be delivered fast and quietly to protect others."

Midwest SMR

Ditronics, an SMR operator in Missouri run by General Manager Greg Dittlinger, also switched from an analog Logic Trunked Radio (LTR) system to a three-site DMR trunked system.

For his company, SMR started in the early 1980s with three channels of 800 MHz at one site, which rapidly increased to two sites, almost maxing out capacity. After adding telephone interconnect and using a full-duplex radio system in the late 1990s, Ditronics' channels were slated for 800 MHz rebanding under the FCC's 800 MHz reconfiguration plan, leaving the company with two options, Dittlinger says. The SMR could have either retuned to new 800 MHz channels or sold its old licenses to Nextel Communications. The company sold its

Using this DMR technology, information can be delivered fast and quietly to protect others. — Kevin McCrewell, U.S. Security Associates

licenses in 2002 and began acquiring spectrum in the UHF band. Within months, it was in business again.

In 2014, Dittronics was acquired by Warner Communications of St. Louis and introduced to the digital world. "It was time to upgrade our system to DMR, and Hytera was the right partner for us," Dittlinger says. "We converted two channels at each site, which gave us four talk paths to Hytera multisite XPT. We added IP connectivity to the new systems, which allowed subscriber units to roam from site to site without changing channels."

After making the switch, within a few months, 75 percent of the SMR's customers had switched to the new system and were in the process of expanding the sites to add more capacity, as well as GPS capabilities. "The main benefits of DMR ... are much better audio quality, increased range, private calling, messaging and GPS capabilities, as well as the ability to add sites to the system to increase the overall footprint or to fill in weak coverage areas," he says.

With Dittronics located in a fairly rural area, most customers are agricultural, trucking and service related, and DMR's improved audio quality has made for great business. "That's really all that the end user is interested in; when they key the mic, they want to know that their call will go through," Dittlinger says. "The biggest advantage for the end user of our system is the huge area that they can now cover without the need to scan or change channels."

The Future

SMR works for business customers who want to take advantage of a low-cost dispatch system. "I think there's life in the SMR mar-

ket," Marcus says. "There's life down in Georgia for Dean's Commercial Two-Way who partnered with local utilities to team up and provide SMR to schools and other organizations. There's life in the converted taxi business that transports elderly patients and blood bank

deliveries. The SMR business is viable through DMR. We're giving them this opportunity to have their own digital system." ■

Taryn Walker is associate editor at *Mission-Critical Communications*. Email comments to twalker@RRMediaGroup.com.

CONNECTING WORKERS HAS NEVER BEEN EASIER

Multi-site Newly Available

Hytera XPT Digital Trunking

- Trunking without a dedicated control channel
- Quick deployment with simple infrastructure architecture
- Large capacity with 16 voice and 16 data channels in each site
- Economical and practical digital solution

Hytera
Respond & Achieve

www.hytera.us | info@hytera.us | 1-800-845-1220

RadioResource *MissionCritical Communications* delivers wireless voice and data solutions for mobile and remote mission-critical operations. Editorial content targets organizations in the United States and Canada with mobile and remote communications needs, including public safety, government, transportation, manufacturing, utility/energy, business, and industrial entities. The magazine covers industry news; case studies; innovative applications; product information; emerging technologies; industry reports and trends; and technical tips. RadioResource *MissionCritical Communications* is published by RadioResource Media Group. Pandata Corp., 7108 S. Alton Way, Building H, Centennial, CO 80112, Tel: 303-792-2390, Fax: 303-792-2391, www.RRMediaGroup.com. Copyright 2016 Pandata Corp. All rights reserved. Reprinted from the October 2016 issue of RadioResource *MissionCritical Communications*. For subscription or advertising information please call 303-792-2390 or visit www.RRMediaGroup.com.

- PD9
- X Series
- PD7
- PD6
- PD5
- PD4
- PD3



PD982



Full Duplex Call



Digital Noise Cancellation



Single Frequency Repeater Mode



IP68



Bluetooth 4.0



Micro SD Card



Smart Battery

ENRICHING YOUR DIGITAL EXPERIENCE

NEW MEMBER TO WORLD'S MOST COMPLETE DMR PORTFOLIO

