

A soldier in full combat gear is shown in a blue-tinted, semi-transparent overlay, appearing to move through a doorway or a narrow passage in a stone building. To the right of the soldier, a large, glowing blue Wi-Fi symbol is superimposed on the scene. The background shows a stone wall with a window and a doorway where another soldier is partially visible. The overall aesthetic is futuristic and technological.

Radio Realignment

FOLLOWING TRANSITION OF THE JOINT TACTICAL RADIO SYSTEM, THE ARMY IS BEGINNING TO FIELD THE FIRST SET OF NEXT-GENERATION RADIOS.

By NANCY JONES-BONBREST

For the first time beginning later this year, soldiers on the battlefield will be equipped with voice and data radios that are not dependent on fixed infrastructure or line-of-sight communications, representing a pivotal step forward for the Army's tactical radio portfolio.

The current fielding of the Rifleman and Manpack radios comes only months after a Department of Defense decision to realign its radio programs in an effort to continue advancing technology through industry innovation in hardware, while leveraging years of government investment in both hardware and software.

"Tactical radios left the Army as a managed item for a time. Now the Army is bringing that back and reconstituting it," said Colonel William "Russ" Wygal, project manager for tactical radios (PM TR). "The message is that the Army believes an important part of its communications infrastructure is in tactical radios."

Known as software-defined radios (SDR), the new capabilities provide soldiers with state-of-the-art networking radio systems that greatly improve communications for the most disadvantaged

users—the small unit down to the individual warfighter. Prior to SDR development, dismounted soldiers and those in vehicles could face less reliable radio communications as they moved out of line of sight.

Now, the Rifleman, Manpack and other radios under development will solve that inconsistency by acting as their own "routers" with networking waveforms such as Soldier Radio Waveform (SRW). Using those waveforms, the SDRs are built to send both data and voice information between fixed command centers, vehicles on the move and dismounted soldiers on patrol.

The SDR radios will bring a new level of flexibility and agility to the battlefield, providing forward-positioned forces with terrestrial, celestial and aerial tier communications.

"The SDRs extend our range of communications and allow soldiers in mountainous and austere environments to exchange voice and data with each other and with higher headquarters," said Wygal. "In essence, they allow troops to share more information over greater distances in significantly less time."

PROGRAM MIGRATION

DoD retired the Joint Program Executive Office for the Joint Tactical Radio System (JTRS) last year, migrating several of its programs to the Army's Program Executive Office for Command, Control and Communications-Tactical (PEO C3T). The programs transferred to PEO C3T included Handheld, Manpack, Small Form Fit (HMS), Mid-Tier Networking Vehicular Radio (MNVR) and Airborne Maritime/Fixed Station (AMF).

The non-proprietary JTRS software waveforms, such as SRW, will be managed by the new Joint Tactical Networking Center (JTNC), ensuring interoperability across the services and allowing the continued development of open standards that industry can compete to build the hardware/radios that work on that network.

With the realignment of the radio programs to PEO C3T, the Army will look to industry to fill a vital role in the streamlined development and production of SDRs.

"Technical advances in the commercial software-programmable radio market that took place during the JTRS

developmental effort have enabled effective hardware solutions—radio ‘boxes’—to be developed,” Wygal said. “Along these lines, guiding industry innovation so that it can address emerging Army capabilities and requirements, counter threats and promote greater affordability is a key focus as we move forward.”

The first Rifleman and Manpack radios are currently being fielded to select brigade combat teams (BCTs) as part of Capability Set 13 (CS 13), the Army’s first mobile communications package providing integrated connectivity throughout the BCT.

The Rifleman is carried by platoon, squad and team-level soldiers for voice communications. It also connects with handheld devices to transmit text messages, graphics and other data.

The Manpack, being fielded in both mounted and dismounted configurations, will bridge legacy networks to SRW networks, allowing dismounted leaders with the Rifleman Radio to communicate with legacy-equipped units and also access beyond-line-of-sight satellite networks.

The Rifleman and the Manpack programs will both conduct full and open competitions that are open to all industry partners. In late 2012 and early 2013, requests for information (RFIs) were issued for both programs, to collect industry input in preparation for conducting the competitions this year.

NON-DEVELOPMENTAL ITEMS

Leveraging progress in the commercial radio market and maturation of nonproprietary waveforms, both the AMF and MNVR programs were restructured as non-developmental item programs. This designation allows the program to meet requirements using COTS hardware solutions that can work with waveforms housed in the JTNC’s Information Repository.

PM AMF is overseeing two software-programmable radios with the technology to connect rotary wing aircraft with ground units, allowing the transmission of data, voice and video over the wireless, secure network.

The Small Airborne Networking Radio (SANR) is designed for the Apache, Chinook, Black Hawk and Kiowa helicopters, as well as the Gray Eagle unmanned aircraft. The Small Airborne Link 16 Terminal (SALT) is being developed for the Apache aircraft. Both offer new networking technologies



Soldiers from the 4th Brigade Combat Team, 10th Mountain Division carried Rifleman Radios at Fort Polk, La., in March 2013. The Rifleman Radio is part of Capability Set 13, the Army’s first fully integrated package of network equipment that transmits voice/chat communications and situational awareness data throughout the BCT. [Photo courtesy of Staff Sgt. Kulani Lakanaria, 4th BCT, 10th Mountain Division]

capable of connecting the tactical edge through terrestrial and aerial tier communications not reliant on satellite networks or fixed infrastructure. In mountainous terrain, such as Afghanistan, line-of-sight communication is often unavailable.

“It’s the same concept of being able to get the network out to the tactical edge of the battlefield,” said Captain Nigel Nurse, project manager AMF. “These networking radios do not require any satellite or satellite connectivity. The best way to think of them is sort of like cellular networks without the antenna infrastructure.”

Last August, PM AMF released an RFI to industry for the development of the SANR, and officials are now meeting with the RFI respondents for the second time to discuss capability requirements. An RFI also was also released for SALT to shape the best acquisition approach. Both AMF radio programs are slated for a Milestone C decision by the third quarter of fiscal 2014.

The MNVR capability will provide an extension of data services from the upper tactical network at brigade and battalion to the lower tactical network at company and platoon echelons. Through software reconfiguration, these radios will emulate current force radios and operate new networking waveforms, offering increased data throughput through self-forming, self-healing and managed communication

networks. MNVR is the replacement for the canceled Ground Mobile Radio program.

As development continues on HMS, AMF and MNVR, the Army will synchronize and ensure compatibility with the COTS and legacy radios in the field, which are also managed by PEO C3T. The realignment also is facilitating hardware and software integration as the Army progresses to its objective network architecture and CS 14.

As the Army continues to advance its tactical radio programs, it will use lessons learned to drive innovation and deliver next-generation radios that significantly increase capability for U.S. soldiers.

“We are leveraging the considerable technological progress achieved over the past decade of JTRS development to harness industry’s ability to develop, build and deliver cost-effective radio hardware solutions,” said Major General N. Lee S. Price, program executive officer for C3T. “This will lead to enhanced communications capabilities from the brigade down to the individual soldier.” ★

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