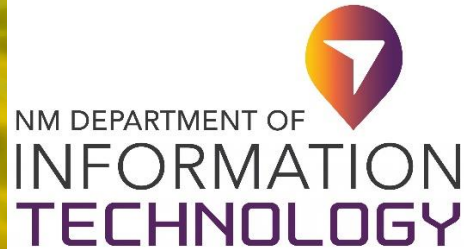**New Mexico Digital Trunked Radio System (NM-DTRS)**
Michael Rohrbacher – Director of Public Safety Communications
New Mexico Department of Information Technology

Background

The State of New Mexico Department of Information Technology currently operates and maintains public safety radio communications for over 50 state, local, tribal, and federal agencies. The NM-DTRS (Digital Trunked Radio System), a unified platform for public safety communications, became a reality in 2019 when deployment of the new system began. Prior to this time, services were provided through multiple disparate conventional analog systems, and interoperability between state agencies was not easily achievable. These 'legacy' systems operated in various frequency bands (VHF, UHF and even Low Band, which occasionally proved useful for listening to school buses from Columbia). To complicate matters, most of the system did not utilize repeaters, instead utilizing split frequency half-duplex base stations. This meant that personnel with radios in the field could not hear or talk to each other unless they abandoned their main dispatch channel and went to a simplex channel. "With over 25 years in Public Safety Communications, this is the first time I have ever worked in an environment where two officers in their patrol units in the same parking lot can't talk to each other on the radio unless they switch to a simplex channel." (Michael Rohrbacher – Director of Public Safety Communications). The 'legacy' systems also had inconsistent and inadequate coverage while simultaneously lacking contemporary features such as alias display for calling radios, capacity, suitable encryption, scalability, and good voice quality.

The Solution: Project 25 Trunking – NM-DTRS

The Department of Information Technology opted to deploy an entirely new state-wide radio system based on the Project 25 standard. The decision to utilize Project 25 was made for many reasons:

- Project 25 is a proven technology and widely supported.
- Project 25 provides a vendor-agnostic platform for user radios, which allows agencies to have a choice of manufacturers and promotes competition in the marketplace.
- Project 25 compatible hardware is eligible for grant funding in New Mexico.
- Project 25 continues to evolve and support new features.
- Project 25 provides the opportunity for a high level of interoperability between partner agencies.

System Metrics

System Type: Motorola Project 25 Phase I/II
Operating Bands: 7/800 MHz
Sites upon completion: 170
Coverage upon completion: Approximately 92 percent
Number of agencies on system: 50 and counting
Deployment: Currently in year four of deployment
Site Connectivity: Private microwave and fiber, carrier fiber
Security: Project 25 Link Layer Authentication required
Encryption Types Supported: AES, ARC4
Subscriber Radios: We maintain and operate our own in-house testing and certification program for subscriber devices. We currently have certified products from the following manufacturers for use on the DTRS:
- Motorola
- Harris

- Kenwood, EF Johnson, Viking
- Bendix King

Advanced Features

The New Mexico Department of Information Technology understands that hosting and operating a successful public safety communications system depends on more than just a solid foundational technology such as Project 25. We deploy a host of supplemental features to ensure that our system is contemporary and delivers connectivity that our subscribers depend on, such as:

- Carrier agnostic connectivity for LTE and Wi-Fi devices
- Supplemental in-building coverage using Wi-Fi
- GPS location of radio devices
- Connectivity options to other systems via ISSI/CSSI
- Voice encryption
- Over the air subscriber radio performance monitoring and alerting
- Dynamic Transcoding between FDMA (Phase I) and TDMA (Phase II)
- In-vehicle repeaters for remote areas
- Deployable sites for planned and unplanned events
- Enterprise call logging recorders
- Mass notification for subscribers regarding planned and unplanned outage events as well as interoperability talk group reservations for planned events

Subscriber Agencies

Adoption of the DTRS system has continued to accelerate. With over 50 agencies currently on the system, we are providing a never achieved level of interoperability and communication capability in New Mexico. A sampling of agencies on the DTRS:

New Mexico State Police	City of Albuquerque
New Mexico Corrections Department	Bernalillo County
New Mexico Youth and Family Services	Sandoval County
New Mexico Department of Transportation	City of Rio Rancho
New Mexico State Parks	Federal Bureau of Investigation
New Mexico Dept. of Information Tech.	Bureau of Alcohol Tobacco and Firearms
New Mexico Tax and Revenue Dept.	United States Marshals Office
New Mexico Superintendent of Insurance	National Park Service
Dona Ana County	Customs and Border Protection
Village of Los Lunas	Spaceport America
Eddy County	City of Santa Fe
New Mexico State University	Drug Enforcement Agency

Interoperability

The DTRS has proven time after time how seamless interoperability can be provided through planning, coordination, and a powerful vendor agnostic platform such as Project 25. Several regional interoperability groups operate throughout the state. The purpose of these groups is for regional entities to come together to discuss solutions to common interoperability problems and to establish interoperability plans. Interoperability planning is not limited to DTRS, since interoperability involves everyone, not just DTRS subscribers.

Notable multi-agency events that rely on DTRS for communications:

- Albuquerque International Ballon Fiesta
- New Mexico State Fair
- Presidential visits
- Major law enforcement incidents in the Albuquerque area coordinated with state, local and federal agencies
- Zozobra Festival in Santa Fe

"New Mexico's statewide P25 Phase II radio system deployment, although still in its early stages, has already had a truly transformative impact on first responders and public safety communications within the state. The system is an open platform available to tribal, local, state, and federal entities. As a result, for the first time in the state's history, public safety agencies across all levels of government are enthusiastically sharing a common communications infrastructure that offers seamless interoperability – we are gradually moving away from islands of disparate radio systems and significantly removing the barriers to interoperability. The system and the interoperability it affords has already proven invaluable at major, multi-agency events such as the New Mexico State Fair and the Albuquerque International Balloon Fiesta. We're excited to be making a difference in the safety and effectiveness of first responders throughout the state, and we are eagerly working to continue rolling out coverage to all regions of the state." Charles Ross – Systems Integration and Public Safety Network Operations Manager

Maintenance

The Public Safety Communications Bureau of the New Mexico Department of Information Technology employs over 40 full time personnel across four business units. We maintain maintenance shops in five cities in New Mexico and are proud to be 100% self-maintained; we do not rely on any vendor for the day-to-day maintenance and operation of the NM-DTRS.

Governance

The DTRS deployment project is led by the New Mexico Department of Information Technology. The system is deployed based on the needs of state agencies and local partners. An advisory committee of internal and external stakeholders provides input to the Department. Decisions regarding deployment strategy and logistics are made based on the overall common good of all subscriber agencies, state and otherwise. The department hosts a quarterly subscribers' group meeting which moves around the state. All current and prospective subscribers are invited to attend. The purpose of the quarterly subscribers' group meeting is to:

- Share information regarding deployment of the system
- Share updated coverage maps
- Introduce new features

- Discuss any operational or policy changes
- Hear concerns and suggestions from the subscriber community
- Promote partnership and comradery amongst subscriber agencies

The New Mexico DTRS, although primarily owned and operated by the State of New Mexico, is foremost a system for the first responders of New Mexico – all first responders, at all levels.

We invite you to learn more about the New Mexico Department of Information technology at

https://www.doit.nm.gov/