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## Wisconsin State Patrol Tests New Path to Radio Interoperability

The Wisconsin State Patrol, which oversees traffic incidents, statewide voice communications and mobile communications networks, has devoted several years to developing a strategy for adopting the Project 25 radio interoperability standards.

Project 25 refers to a suite of standards for digital, two-way wireless communications products. A committee of manufacturers, public safety agencies, and state and federal communications professionals launched Project 25 in 1989 to provide detailed standards for interoperable radios.

### HOW LAW ENFORCEMENT CAN MIGRATE TO P25 STANDARDS

P25-compliant products are being increasingly adopted in today's digital age. The radios can communicate in analog mode with legacy radios and in either digital or analog mode with other P25 radios. P25-compliant products allow for a high degree of equipment interoperability and economies of scale. Specifically, P25 products can be upgraded gradually, achieving interoperability and security, encouraging committed manufacturers to provide compliant products, fostering competition and achieving cost-effective communications.

### CONVERTING FROM ANALOG TO DIGITAL: P25 LIMITS

Many agencies cannot afford to buy and set up a P25-compliant system outright. Estimated costs can easily run in the millions of dollars and entail dedicated engineering support. In addition, various radio manufacturers interpret the P25 standards differently and use different words to refer to identical ideas, creating confusion for law enforcement agencies that want to make the switch.

New technology and decreasing production costs now allow agencies to switch from analog to P25-compliant products gradually without incurring the astronomical costs currently associated with making a full upgrade. In this way, law enforcement agencies can transition from analog to full P25 digital as funding and time allow.

### MAKING THE SWITCH TO P25

The Wisconsin State Patrol ran a four-site pilot program that created P25 capabilities across the network. For this pilot, the agency tested a P25 channel controller, a new product that converts conventional analog repeaters into P25 repeaters across multiple sites and in support of multiple frequencies.

Several companies provided analog repeaters at test sites. Mobile and portable radio companies were also involved, assessing the compatibility of their equipment with the central system.

The Wisconsin State Patrol and other participants ran into various glitches related to programming. However, the pilot experience showed the extent of the cooperation needed between the vendor and law enforcement communities to achieve the best and most cost-effective solution. Other law enforcement agencies planning to upgrade their systems may benefit from Wisconsin's experience and the various issues that surfaced during the pilot.

### BENEFITS OF MIGRATING TO P25

Law enforcement agencies considering adoption of P25 may benefit from reduced technology and labor costs. Agencies can convert existing analog channels to P25 digital signaling without changing base stations.

The emergence of the P25 standard and related products over the past two decades has allowed many agencies to upgrade their antiquated systems and achieve interoperability. With increased competition in the marketplace, agencies will see decreased costs for the use of P25 technology. For agencies considering converting to P25, there are benefits and indirect cost savings to be gained, including the ability to use existing equipment and, thus, avoid the need for added training.

A strong partnership between law enforcement agencies and product vendors is necessary throughout the product development and installation phases. In addition, the law enforcement community must develop a standard lexicon of P25 terminology for product vendors. Thus, its continued role in the changing P25 standards landscape remains an integral one.

### PITFALLS AND LESSONS LEARNED

The Wisconsin State Patrol P25 pilot exposed several pitfalls that agencies should consider when migrating to P25, namely the varying terminology, settings and software provided by the manufacturers. Previously, vendors have interpreted the P25 standards in their own way, without any guidance from

the law enforcement community. Through this pilot experience, practitioners and vendors alike gained a better understanding of the outstanding issues and identified ways to improve the implementation of P25-compliant technology.

### FOR MORE INFORMATION

- **NIJ's Communications Technology (CommTech) Web Site:**  
<http://www.ojp.usdoj.gov/nij/topics/technology/communication/welcome.htm>
- **Wisconsin State Patrol**  
<http://www.dot.wisconsin.gov/statepatrol>
- **Project 25 Technology Interest Group**  
<http://www.project25.org>
- **Wisconsin State Interoperability Council**  
<http://siec.wi.gov>

### NOTE

Jackson, D. "Raytheon JPS P25 Migration Path Demonstrated in Wisconsin," *Mobile Radio Technology* (November 8, 2007). Available online at [http://urgentcomm.com/project25/news/raytheon\\_p25\\_wisconsin\\_110807/index.html](http://urgentcomm.com/project25/news/raytheon_p25_wisconsin_110807/index.html).

