



**IWCE WEBINAR**  
**September 19 2:00 PM ET**

# **Project 25 Mission Critical PTT**

## **Capabilities and Benefits**

**Presented by:**  
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**PTIG - The Project 25 Technology Interest Group**  
**[www.project25.org](http://www.project25.org)**

# Project 25: Summary



- **Designed for public safety by public safety**
- P25 is a suite of mobile radio standards and bulletins which define interoperable communications.
- Developed in partnership between Public Safety and TIA
  - Project 25 formed in 1989
  - Initial standards released in 1995
  - Original goals have been met
  - Ongoing development and evolution of the standards continue with broad industry support





## The Project 25 Eco-System Today

### Established Base of over 2250 Project 25 Systems on the air today

Including 37 Statewide P25 Systems, numerous region wide , county wide, municipality, campus, and individual facility 25 systems.

**Examples:** Michigan 90,000 users 1,665 Agencies 12 Million PTT /mo.

Miami/Dade 30,000 users, 110 Agencies, 7 million PTT/mo.

**A Vibrant Competitive Market-place with 40 Project 25 Product and Service providers** offering a diverse range of P25 solutions at multiple price points and P25 is the preferred technology for Federal Grants

**Independent Testing** through the DHS CAP Program and a number of certified independent testing Labs.

**A Live, Active, Evolving Technology** that continues to develop with new capabilities, upgrades, and test standards

# 40 Vendors for Project 25 Equipment and Services

Available in VHF, UHF, 700, 800, and 900 MHz



**16** Fixed station/repeater suppliers



**15** Subscriber suppliers:

Mobiles, Portables, Vehicle Repeaters, Pagers



**13** Console suppliers

**16** Network providers

**7** Test equipment suppliers

**11** Consultant services





## Why have so many PTT Users chosen P25?

### *Superior Interoperability*

**Multiple Air Interfaces:** P25 offers interoperable FDMA and TDMA Common Air Interfaces and products that are backwards compatible with legacy Air Interfaces.

**Multiple Wireline Interfaces:** P25 has well defined Wireline Interfaces to link: P25 Systems (ISSI), Consoles to P25 Systems (CSSI), Conventional Stations to P25 Systems (FSI)

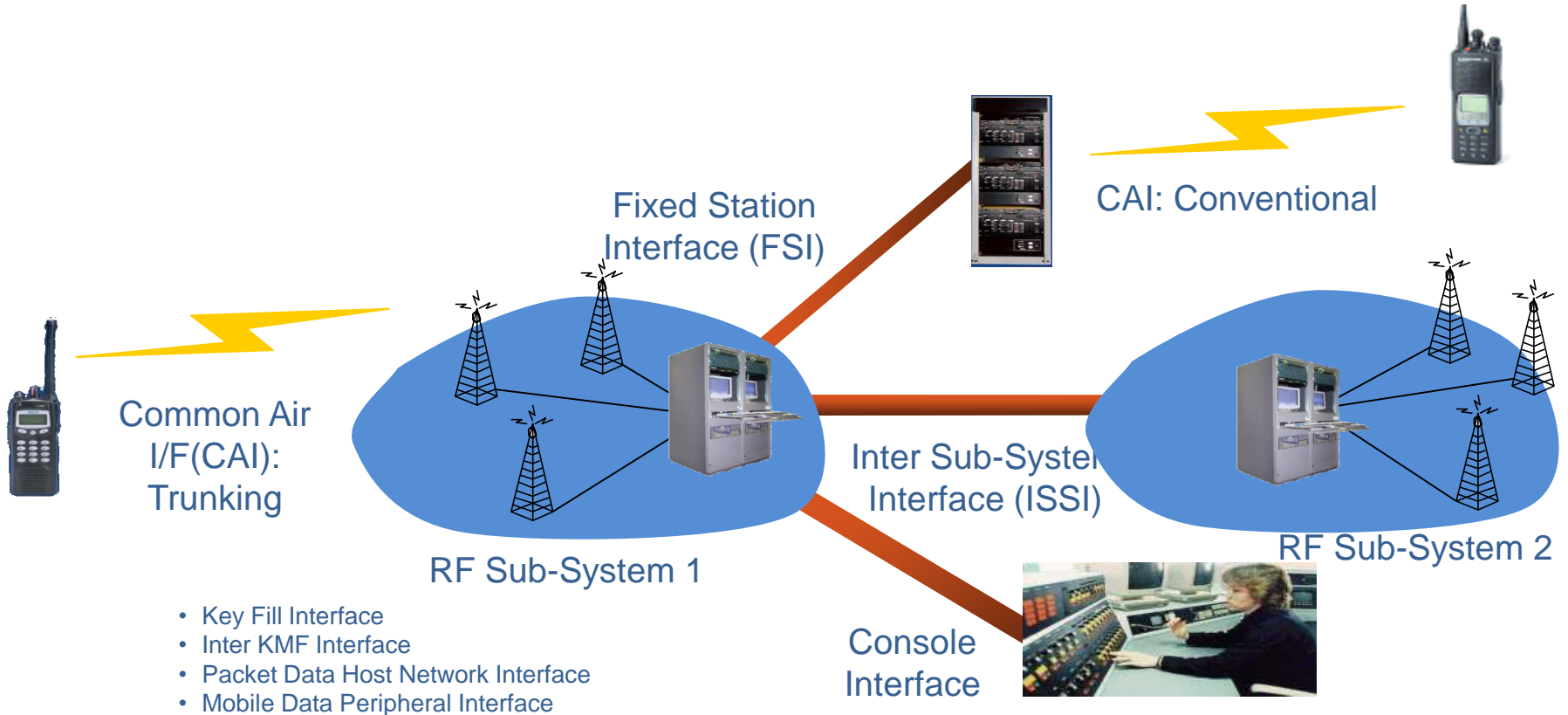
**Frequency Agnostic Operation in Multiple Bands:**

VHF 136-174 MHz, UHF 380-512 MHz, 700/800/900 MHz

# Key Project 25 Interfaces



P25 has standardized the Common Air Interface (CAI) and multiple Wireline Interfaces





## Why have so many PTT Users chosen P25?

### ***P25 Interoperability Use Cases***

- The P25 ISSI permits roaming to a neighboring system while maintaining home system contact. (This may be a model for Cellular PTT interface)
- Reliable “Radio to Radio” P25 Direct Connections using the P25 Common Air Interface (CAI) when Infrastructure is down or overwhelmed
- Neighboring jurisdictions can communicate during a common event or vehicle pursuit and Outside agencies can respond for mutual aid.
- P25 radios can be programmed with National, Statewide, Regionwide Mutual aid talk interoperability talk groups for use in emergency/disaster events. These channels have been defined by FCC and NTIA and have common channel names developed by NPSTC. FCC requires P25 for 700 MHz interoperability channels



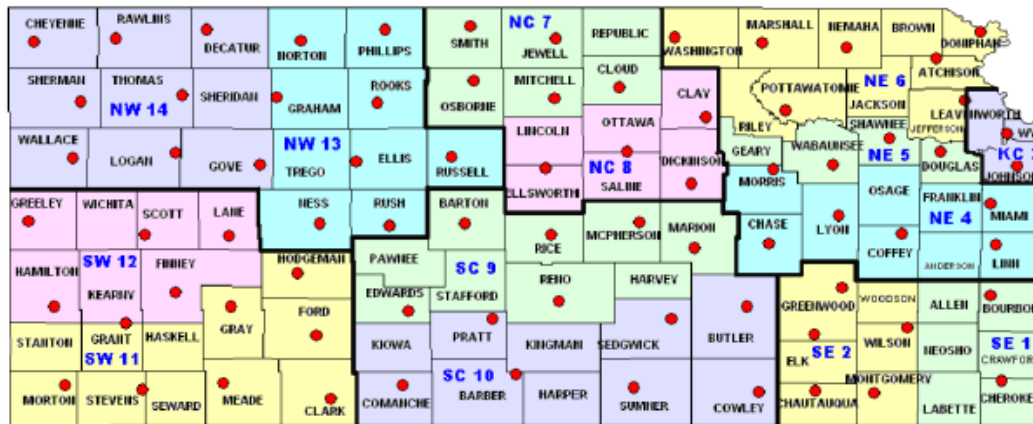
# P25 Applications for Emergency/Disaster PTT Communications

- **P25 State-Wide Communications Systems**

## Regional Interoperability Talkgroups Already Deployed

- Organized as Homeland Security Regions
- Standardized Interoperability Templates for Each Region
- Program All Radios With All Interoperability Templates

Kansas Homeland Security Regions and KDOT Tower Sites



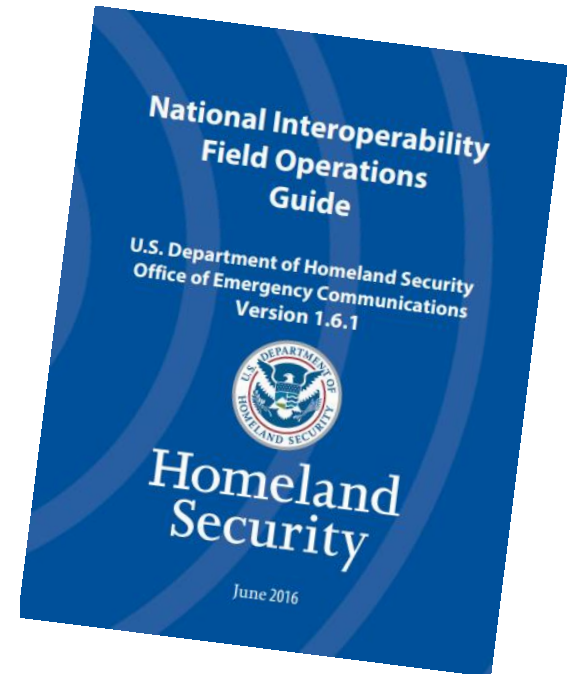
- 1 – PSAP
- 2 – MED (Hospitals/Medical)
- 3 – EOC (Emergency Operations Center)
- 4 – LE
- 5 – EMGT (Emergency Mgmt)
- 6 – FIRE
- 7 – EMS
- 8 – PWKS (Public Works)
- 9 – channel 9 and on are KHP event channels specific to that zone





# P25 Applications for Emergency/Disaster PTT Communications

- User Considerations:
  - Mutual Aid Agreements:
    - Prepare Ahead
    - Regional ID Planning
    - Coordinate Encryption Keys
  - P25 Interfaces
    - CAI, Encryption and ISSI Enhance
  - V/U/800 Nationwide Interoperability Channels
    - Mix of Analog and P25
    - P25 Radios are Backwards Compatible with Analog
    - Greatest Common Denominator
  - 700 MHz Nationwide Interoperability Channels
    - FCC Mandates Use of P25





## Why have so many PTT Users chosen P25?

### ***Public Safety Grade Reliability and Performance***

*Developed through 25 years of Standards evolution and product technology improvements.*

**Multiple P25 PTT Voice and Data Services:** Group Call, Emergency Group Call, Broadcast All Call, Unit to Unit Individual ID Call, Telephone interconnect call, Tier 2 Location (GPS), OTAP/OTAR. *All with talking party ID*

**Feature Rich Supplementary Services:** Call Alert, Status Message/Status Update, Radio Check, Radio Unit Monitoring, Radio inhibit/Uninhibit, Priority/Preemptive Priority

**Superior Voice Encryption and Security** using 256 bit AES Encryption, Over the Air Re-Keying, and Authentication.

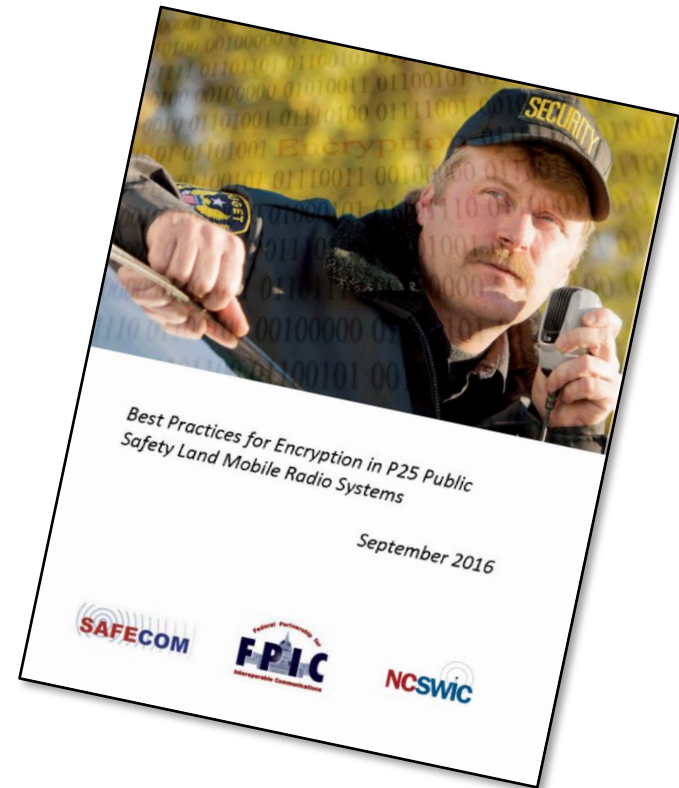
**High Performance Audio Volume and Clarity (P25 Vocoder)** combined with rugged housings that are designed for demanding Public Safety environments

# P25 Encrypted Interoperability



## Identify & Adopt Best Practices for Encryption

- SAFECOM/FPIC/NCSWIC
- P25 LMR Encryption Parameter Overview
- Key ID
- Traffic Encryption Key (TEK)
- Storage Location Number (SLN)
- Algorithm ID
- Recommended Best Practices
- Improved Coordination
- National SLN Assignment PLAN





## Why have so many PTT Users chosen P25?

### ***Project 25 is Cost Effective***

**Multiple System Configurations:** P25 offers: direct mode, repeated, single site, multi-site, voting, multicast, and simulcast configurations allowing scalable, cost effective, system design.

**Sharing P25 Infrastructure** P25 permits multiple agencies to share common infrastructure and each make their own purchasing decisions.

**Statewide and Regionwide P25 Systems are growing rapidly** as smaller agencies realize the benefits of eliminating their LMR operating costs and getting improved coverage and performance of P25.

**P25 is the preferred LMR technology for Federal Grants**

**40 Project 25 Product and Service providers compete for Standards based RFPs**

# Federal Agencies Continue to Support Project 25 (DHS OEC briefing IWCE 2018)



Mission Critical voice land mobile radio is going to be around for a long time

Project 25 is the best choice for interoperability

Most federal agencies are committed to Project 25

- P25 is the recommended technology of choice for interoperability in the SAFECOM Grant Guidance and the DHS NECP
- DHS actively participates in the P25 development process and currently chairs the P25 Steering Committee



# P25 PTT Summary

- Project 25 offers “Public Safety Grade” Reliability, Voice Quality, Interoperability, and Security for PTT radio services.
- P25 offers a robust PTT capability set including: Group calls, Individual Calls, Voice, Data, Location, all with optional full AES end to end encryption and authentication.
- The P25 standard was originally defined and continues to evolve based on Radio User input and direction.
- There is broad support for the use of P25 Standards and Technology for Interoperable Communications from: DHS, SAFECOM, NPSTC, DoD, and 40 P25 Commercial Product manufacturers and Service providers.



# Project 25 Technology Interest Group

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Friday, September 23, 2016

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# WWW.Project25.org



### The Latest News

**P25 Foundations and P25 User Experience IWCE PPTs now available**

**MissionCritical Communications Publishes P25 E-Book**

**PTIG Publishes Updated Frequently Asked Question (FAQ) Resource v1.3**

**Project 25 Testing Update Report by Compliance Testing LLC**

**Project 25 Technology Interest Group Elects a New Board of Directors and Officers for 2016-2017**

### Upcoming Events

P25 Standards Meetings TIA TR-8 Philadelphia PA  
October 18 - 20, 2016

IWCE 2017 Las Vegas NV  
March 27 - 31, 2017

## Welcome to the Project 25 Technology Interest Group

The Project 25 Technology Interest Group (PTIG) brings you this web site to provide information on all topics concerning Project 25.

Please register on the site for access to additional information. If you previously registered prior to June 2010, a new registration is required. This is to assure we have current and accurate information.

Registration is required to maintain a spam free site for you. No Fees are required for website registration.

**PTIG MEMBERS NOTE:** When your individual registration is validated for affiliation to a paid membership or a commercial member company, your registration will provide member access privileges.

Use the dialog box titled "Contact Us" on the home page for any inquiries about registration and membership.

This site is the official home of PTIG and our P25 community. Your suggestions and comments are always welcome. Use the dialog box titled "Contact Us" on the home page to make your suggestions, offer comments, or seek more information.

- List of P25 Trunking Systems
- List of P25 Conventional Systems
- P25 Frequently Asked Questions
- P25 Feature Translator
- P25 Standards latest Update
- P25 Steering Committee Approved List of Standards
- P25 Capabilities Guide

## What is Project 25?

Project 25 (P25) is the standard for the design and manufacture of interoperable digital two-way wireless communications products. Developed in North America

## Why P25?

Project 25 enables successful fulfillment of these factors so critical to public safety operations and use of two-way radio communications in the field.