



# Project 25 Technology Interest Group Panel

PSAPs, so now you have P25....How  
does that effect what you do

STEPHEN NICHOLS, DIRECTOR PTIG

**August 16, 2015**





# Agenda

- **Introduction and Overview**

Stephen Nichols, Director, Project 25 Technology Interest Group (PTIG)

- **P25: Standards, Interfaces and Interoperability**

Neil Horden, Chief Consultant, Federal Engineering

- **P25 Frequently Asked Questions**

Jim Downes, DHS Office of Emergency Communications, P25 SC Chairman

- **P25 User Considerations**

Jim Junkins, Director of Emergency Communications, Harrisonburg-Rockingham

- **Question and Answer Period**



## Who is the Project 25 Technology Interest Group?

- **P25 Product and Service providers, P25 Users/System Operators, P25 Consultants. All members are supporters of Project 25 technology, nurturing Project 25's adoption, growth, and expansion.**
- **What do we do:**
  - Manage education and training on Project 25
  - Create and distribute Project 25 information.
  - Offer Users access to the standards process without the rigor of TIA membership
  - Maintain a “neutral ground” among the competing manufacturers and providers

Set your browser to **[www.project25.org](http://www.project25.org)**



## Resources Available: [www.Project25.org](http://www.Project25.org)

- **P25 Frequently Asked Questions**  
*Written to dispatcher, officer, firefighter (non technologist) level*
- **P25 Capability Guide**  
*List of Project 25 Capabilities (features) covered by the Standard*
- **P25 Standards Update Summary**  
*Summary of the latest P25 Standards Meetings with user benefits defined*
- **P25 Feature Translator**  
*link to NPSTC PAM tool*
- **Project 25 List of Systems: P25 Phase1, P25 Phase2**  
*Organized by State with frequency band info*



# Stay Connected at APCO 2015

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## PTIG Panel

# P25: STANDARDS, INTERFACES AND INTEROPERABILITY

Neil Horden, Federal Engineering, Inc.

August 16, 2015





## P25: The Standard

But, much more than a single standard

- P25 is a suite of standards
- Air Interfaces and Wireline Interfaces

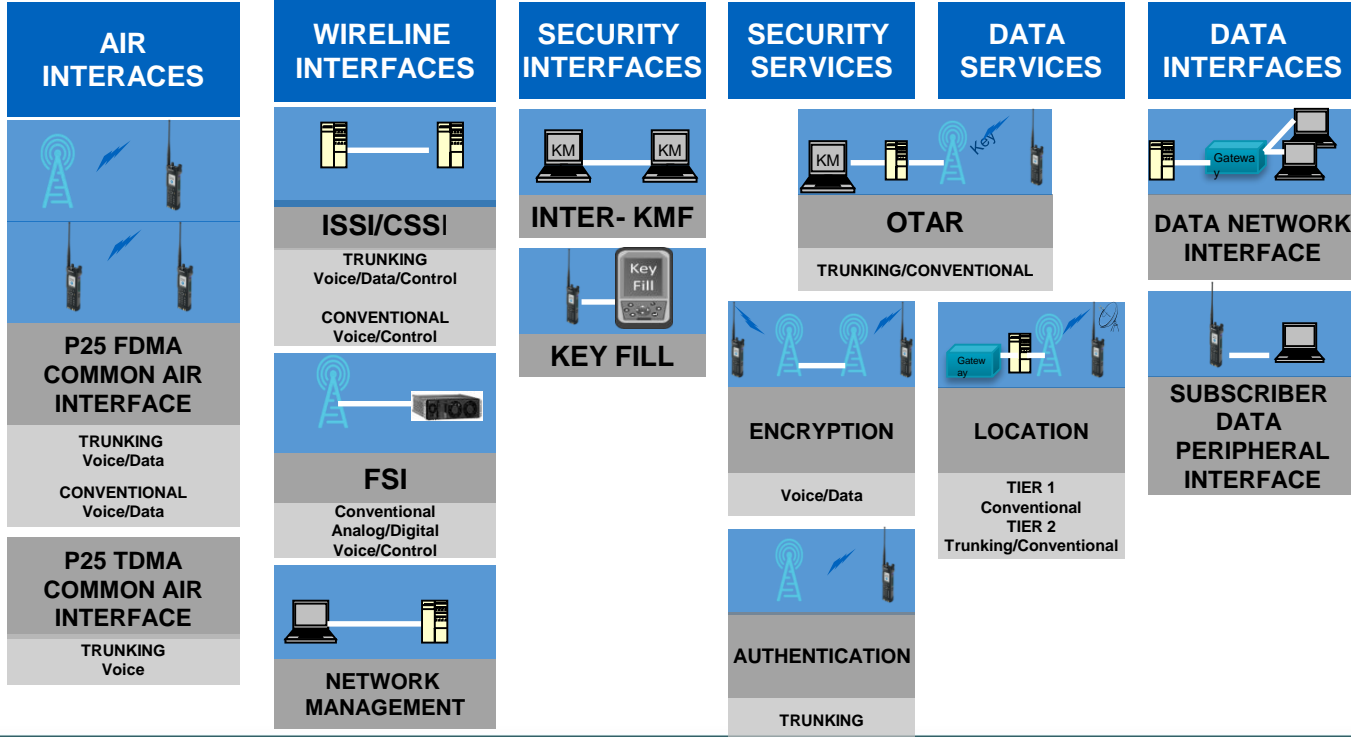


# Project 25: A Suite of Standards

- The P25 Standard is not one document
- It is a suite of over 75 standard documents and over 25 TIA Telecommunication Systems Bulletins.
  - Over 125 documents have been developed and published supporting the Project 25 suite of standards and features
- The P25 suit of standards defines
  - The system interfaces of P25, and The services offered by P25
- Dividing the P25 system up into defined standardized interfaces allows manufacturers to develop products specific to their areas of expertise
  - Allows users to buy products that best meet their specific needs
  - Enables the goal to provide users the flexibility to choose from various manufacturers' offerings to build out their P25 systems
- P25 Documentation Suite Overview (TSB-102-B) describes how the users and manufacturers envision the P25 system

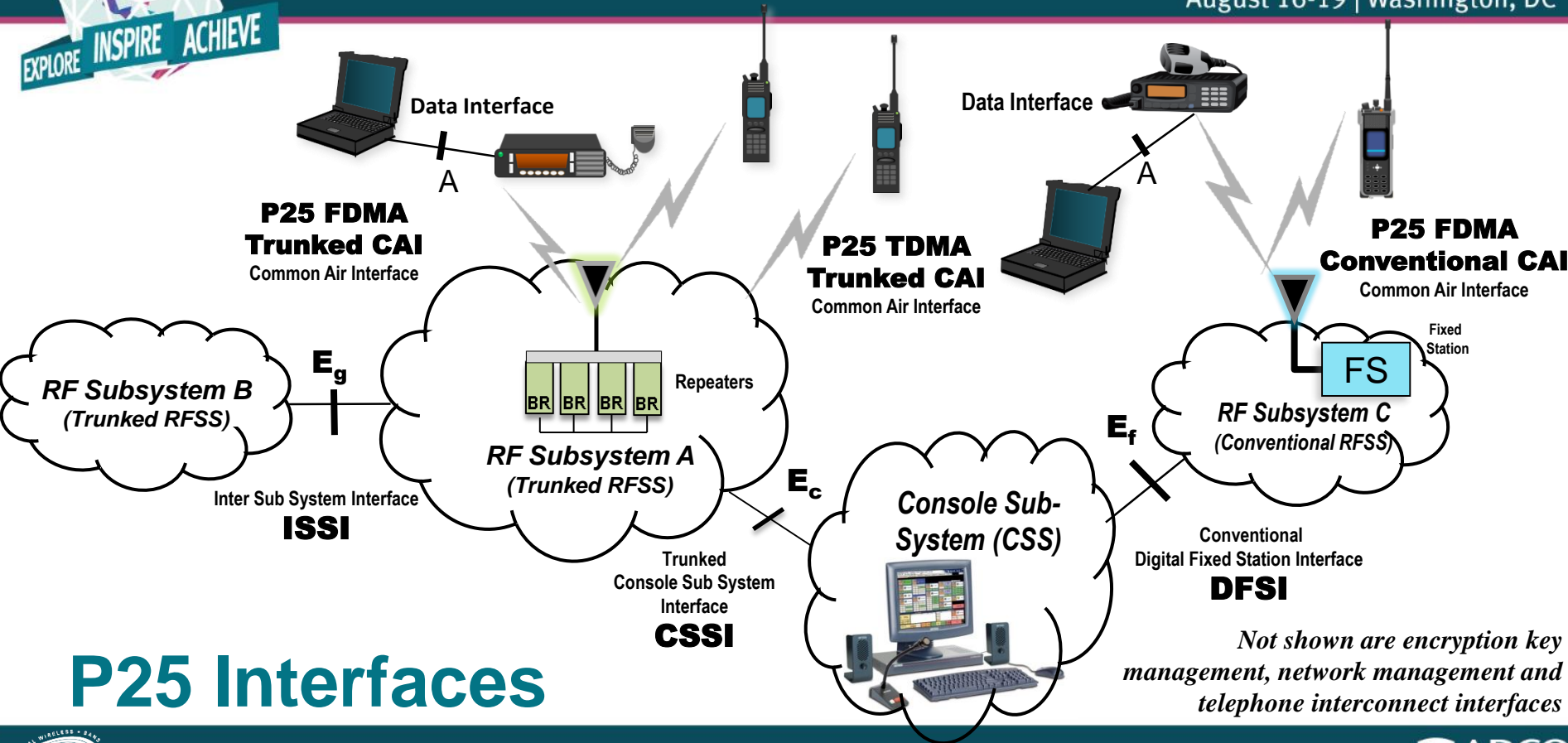


# Project 25: Interfaces & Services





# P25 Interfaces



# P25 Interfaces

*Not shown are encryption key management, network management and telephone interconnect interfaces*



# Standards and Interoperability

- Interoperability is reliant on a common standard
  - Within the system almost any standard will do, but between interoperability partners, a common standard must be selected
    - Multiple agencies sharing a system
    - Multiple jurisdictions cross sharing systems
    - Multiple regions requiring transient operations
- Why P25 as the common standard



## Why P25 as the common standard

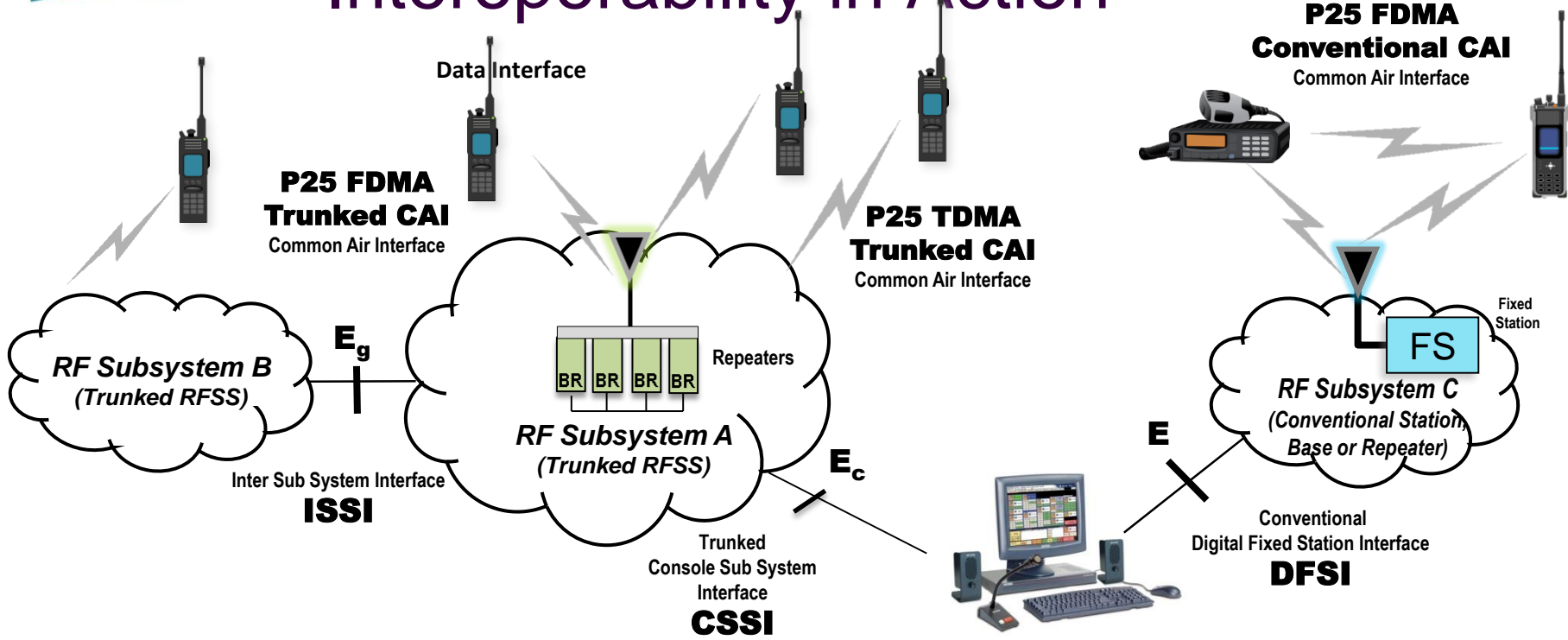
- The only user defined public safety standard
- Widely implemented across public safety
- Supports all operating modes
  - Simplex, Repeater, Trunked
- A living standard that grows with technology



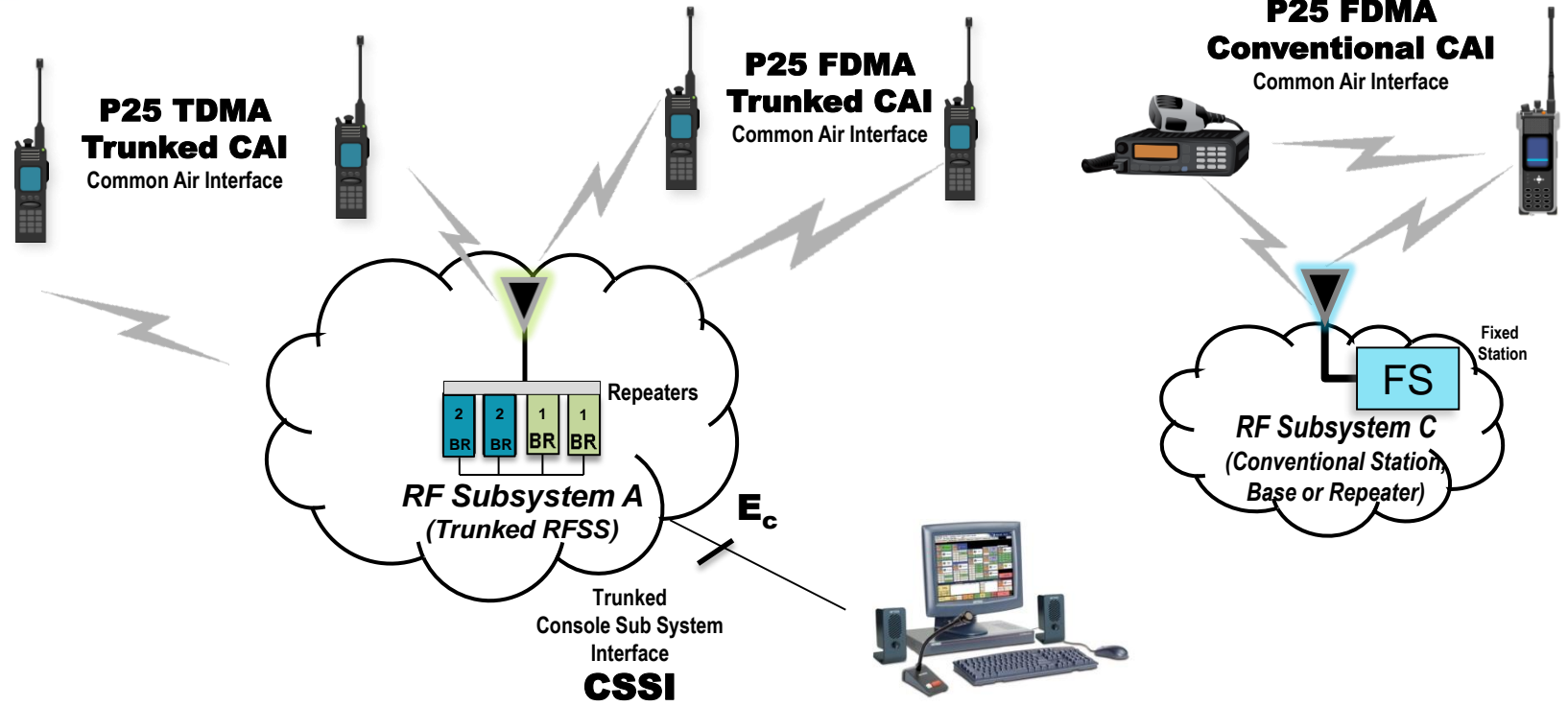
# Barriers to interoperability.

- Technical barriers
  - Standards
  - Frequency Bands
  - Common programming templates
    - Compatible ID plans, etc.
- Operational barriers
  - Operating Procedures
  - Planning

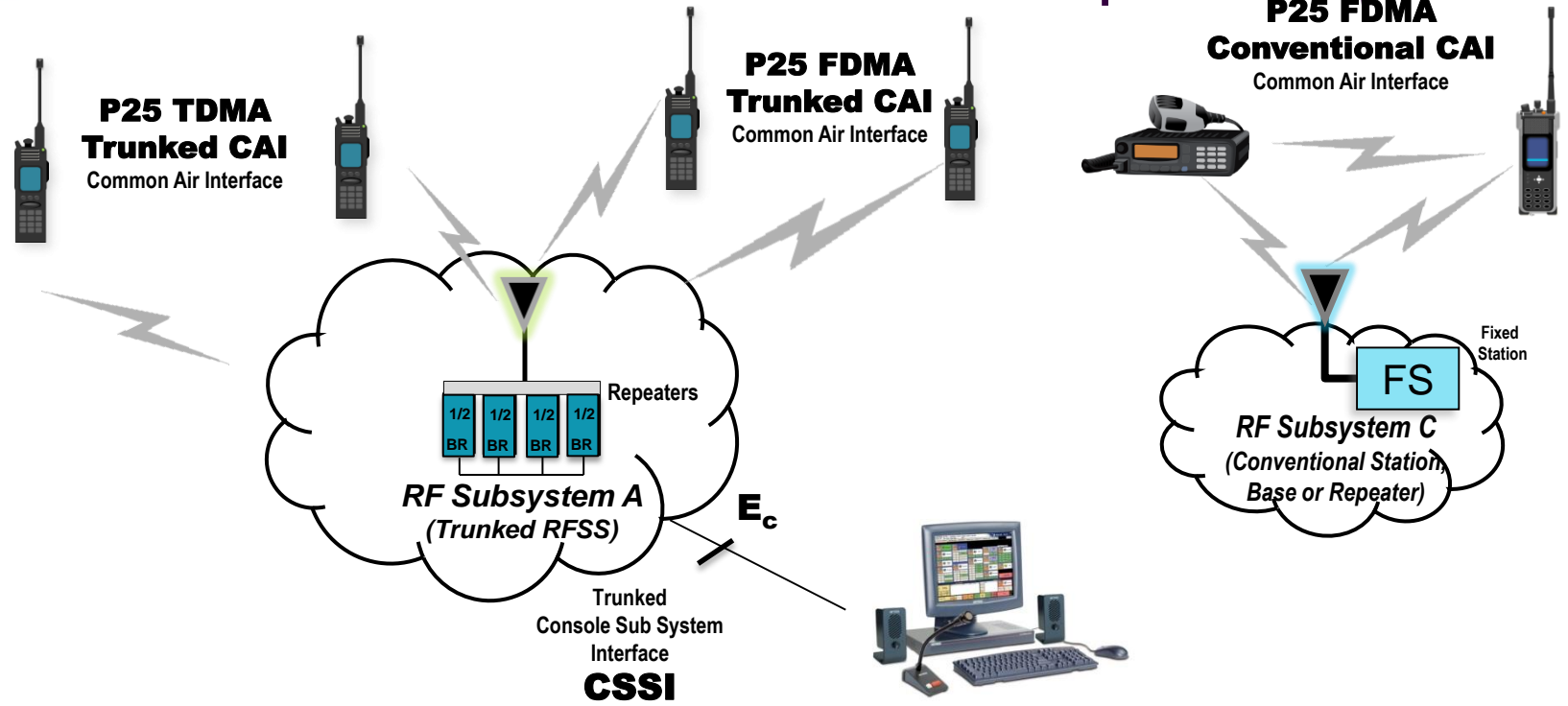
# Interoperability in Action



# P25 from Phase 1 to Phase 2



# Phase 1 and Phase 2 Interoperability







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## PTIG Panel

# P25: FREQUENTLY ASKED QUESTIONS

Jim Downes, Project 25 Steering Committee  
Chair

**August 16, 2015**





## Does the future First-Net LTE broadband data network make P25 obsolete?

- No, most public safety users and organizations agree that LMR will remain the primary technology to support mission critical voice for a number of years
- Most public safety agencies and organizations have identified P25 as the preferred technology to satisfy this requirement and maintain enhanced interoperability
- P25 Steering Committee and User Needs Subcommittee continue to work with industry and joint TIA-ATIS LMR/LTE Working Group to develop standards and specifications to support the LMR/LTE convergence
- We recognize the value of broadband data technology to support P25 data services



# What do I need to consider to get multiple portable and mobile radio vendors on a P25 System?

- P25 provides interoperability and compatibility among multiple vendors
- Final decision with system administrator/manager
- Certain aspects must be considered
  - Frequency Band
  - Common Feature Sets – offered in subscriber unit/required in system
  - Request interoperability test data from manufacturer
  - Be aware of non-standard features
  - Be aware of system constraints that may limit compatibility



## Examples of P25 systems on the air today with multiple vendor subscriber units?

- There are 687 Project 25 Systems known to PTIG operating in the USA. Many have P25 subscriber units from multiple vendors approved for use on their systems.
- Alaska, Wyoming, Mississippi, Arkansas, Oregon, New Hampshire, Dallas/Fort Worth Airport, City of Dallas, City of Wichita, and Lancaster County PA are just a few examples of systems using multiple subscriber units.



## What is the P25 ISSI and P25 CSSI and how do they benefit Public Safety Users?

- The ISSI is the Interface that links one P25 system to another and allows radios to roam between P25 Systems without the need for re-programming. Example: DFW airport and the City of Dallas
- The CSSI is the Interface that allows consoles from different vendors to control P25 radio Infrastructure. This creates a “Console of Choice” capability with P25. Examples: State of Oregon, Lancaster County PA.



## What About Encryption on P25 Systems?

- 256 bit AES is the recommended encryption protocol  
extremely secure,  
superior to past encryption (Audio, range)
- Radios are loaded manually with a Key Fill Device (KFD) or by a Key Management Facility (KMF) via over the air re-keying (OTAR).
- P25 Standard interfaces exist for the key loading from both KFDs and KMFs and linking the KMFs between systems
- Link Layer encryption is the next big project and will improve the security of network interfaces



## What additional Security Interfaces and Services are being worked on in TIA/P25?

- The Development of P25 Link Layer Encryption (LLE) is addressing vulnerabilities and risks identified by users and industry in P25 systems, primarily trunking
  - Provides protection of information in both the trunking and the conventional control channels
  - Protects sensitive user and system id information
  - Provides protection for information being exchanged by air interface peers (i.e. between subscriber units and RF subsystems)





## When will Project 25 be Complete?

- To address the evolving needs of users, and changing FCC/NTIA requirements, the P25 Standards must continually be updated to satisfy those revised requirements.
- The project 25 Standard will continue to evolve with new specifications and clarifications that will:
  - resolve interoperability issues and add security upgrades
  - add additional features and P25 testing specifications
  - offer improved P25 performance
  - create additional P25 interfaces (Interface to LTE Broadband data networks)



# Stay Connected at APCO 2015

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PSAPs, so now you have P25...How Does That Affect What You Do.

# P25 User Considerations

**Jim Junkins**

Director of Emergency Communications

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Harrisonburg, VA

**August 19, 2015**





# P25 User Considerations

- Radio Programming: Empowering the User...or Not.
- System Configuration Impact on Users.
- Don't Forget the Emergency Communicator.
- Interoperability...The Holy Grail.



# Radio Programming

What features Should be Provided to Users?

- Legacy vs P25 Features.
- Job/Position, Function, Department?
- KISS: Simplicity and Consistency.
- Empower the User Community.



# System Configuration Impact on the User

- Phase 1, Phase 2 and Hybrid Modes.
- Fleet Mapping.
- Multiple Zones and Systems.
- Radio IDs.



## Don't Forget the Emergency Communicator

- More Than a User.
- Supervisory Features.
- Fully Explain P25 Phases & Operations.
- Train to Train.



## Interoperability...the P25 Communications Holy Grail

- The Interoperability Continuum (Still) Rules!
- Relate Technical Capabilities To User Operation.
- Take Time to Train (Repeatedly) Like You are Going to Play.
- P25 Makes it Simpler & Better for Enlightened Users...Period!





# Stay Connected at APCO 2015

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# Questions?

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