MISSION CRITICAL VOICE ON LTE

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What Is Mission-Critical Voice?
RELIABILITY

Communications in the Absence of Wide Area Network Connectivity

- Remote Areas
- Building Interiors
- WAN Failures
SCALABILITY

Ability to communicate with **100s to 1000s** of first responders in an incident area

Pentagon 9/11/2001

~900 Radio Users*

World Trade Center 9/11/2001

**NYPD:** ~2,000 Officers
**FDNY:** >1/3 of All Companies ‡

*"Answering the Call: Communications Lessons Learned from the Pentagon Attack"
‡"The 9/11 Commission Report"
PERFORMANCE

Call Setup Delay
Trunked P25: 1.1-1.3 s
Conventional: 0.25-0.65 s

Mouth-to-Ear Delay*
Talkaround: 250 ms
Conventional: 350 ms
Trunked P25: 500 ms

*TIA/EIA TSB102-A
VOICE QUALITY
SUPPLEMENTAL SERVICES

Encryption
Preemptive Priority Call
Talking Party Identification
Call Alerting
Voice Telephone Interconnect
Priority Call
Silent Emergency
Discreet Listening
Call Interrupt
Radio Unit Monitoring
DEVICES

Ruggedized Portables

Ruggedized Mobiles

Consoles
LTE Features Needed for Mission-Critical Voice?
EVOLVED MULTIMEDIA BROADCAST MULTICAST SERVICE (eMBMS) – Enables Scalability

Single Packet Sent Over the Air
Received by Group
LTE: PUBLIC SAFETY VOICE EVOLUTION

Mission Critical Voice
Talk-around
Autonomous eNodeB

Large Group
Push-to-Talk

Broadcast/
Multicast
(eMBMS)

Small Group
Push-to-Talk

Unit-to-Unit
Voice

Interoperability
with Legacy
Land Mobile Radio

Interoperability
with Legacy
Land Mobile Radio
Why Mission-Critical Voice on LTE?
MISSION CRITICAL VOICE ON LTE

BENEFITS

**Lower Costs**

Today

Land Mobile Radio + LTE

Future

LTE

**Higher Voice Quality**

Higher Rate Codecs → Higher Voice Quality

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When Will This Happen?
FACTORS INFLUENCING SPEED OF PUBLIC SAFETY LTE NETWORK EVOLUTION

- FUNDING
- POLICY
- RFPs
- TESTING
- LEGACY SYSTEMS

- SPEED OF PUBLIC SAFETY LTE ROLLOUT
- STANDARDS DEVELOPMENT
- SPEED OF COMMERCIAL LTE EVOLUTION
P25 TO LTE MIGRATION

- Separate Networks
- Separate Devices
- ISSI-Based PTT over LTE
- LTE / P25 network Interoperability
- eMBMS
- Complements P25
- Full Mission Critical Voice Features
- LTE devices with Talkaround
MISSION CRITICAL VOICE OVER LTE

1st DEMONSTRATION OF TECHNICAL FEASIBILITY

INTRODUCTION OF HIGHER POWER CLASS LTE MOBILE

FIELD TESTING

URBAN/SUBURBAN ROLLOUTS

RURAL ROLLOUTS

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