



MISSION CRITICAL VOICE ON LTE

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March 2012

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



Emotion

Background Noise



SUPPLEMENTAL SERVICES



Encryption

Preemptive Priority Call

Call Alerting

Talking Party Identification

Voice Telephone Interconnect

Silent Emergency

Priority Call

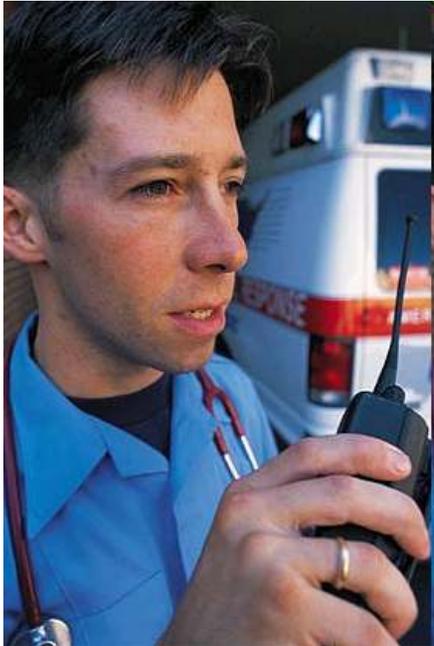
Discreet Listening

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



Unit-to-Unit
Voice

Small Group
Push-to-Talk

Broadcast/
Multicast
(eMBMS)

Large Group
Push-to-Talk

Talk-around
Autonomous eNodeB

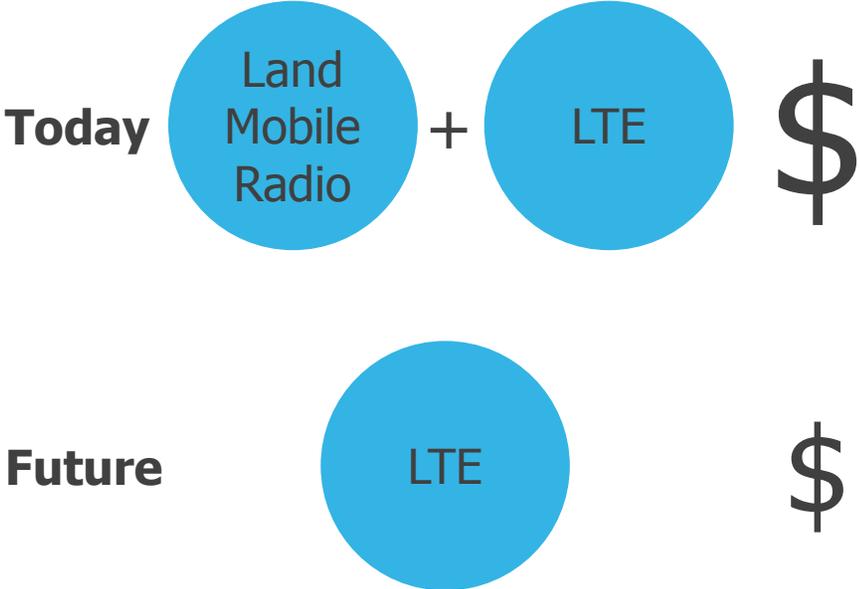
Mission Critical
Voice

Interoperability
with Legacy
Land Mobile Radio

Why Mission-Critical Voice on LTE?

MISSION CRITICAL VOICE ON LTE BENEFITS

Lower Costs



Higher Voice Quality

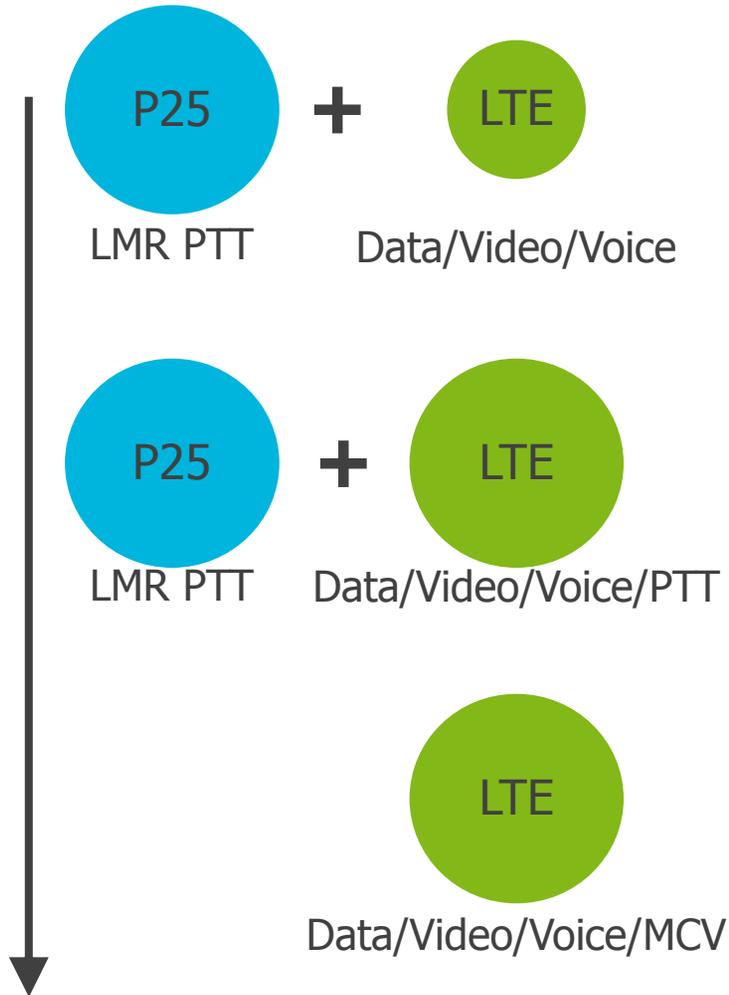


When
Will
This
Happen?

FACTORS INFLUENCING SPEED OF PUBLIC SAFETY LTE NETWORK 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



**RURAL
ROLLOUTS**

YE2013

**FIELD
TESTING**

**URBAN/SUBURBAN
ROLLOUTS**

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