Long Term Evolution (LTE)
Next-Generation Public Safety Communications
Fred Scalera
August 3, 2011
INTEROPERABILITY IS MORE THAN:

Can you hear me now?
NEW THREATS, NEW CHALLENGES... NEEDS NEW APPROACHES...

• The need to effectively undertake action in the field of security, was emphasized by a series of events caused by...

terrorist activity as in New York, Madrid and London or by natural disaster as the Hurricanes, Tsunami, earthquakes,....

In this new environment, Governments are strained to take all necessary actions to protect their citizens and critical infrastructures in investing on mission critical networks, applications, and design expertise.
Long Term Evolution (LTE) for Public Safety

- Voice
- Video
- Data

Combining Voice, Video, and Data enhances Situational Awareness, Officer and Public Safety, and Operational Effectiveness.
Public Safety Data Applications

- Full-Duplex Video Conferencing ("See what I see")
- Near-Real-Time Video Streaming
- Bulk File Transfer
- Email
- Web
- Push-to-Talk, VoIP
- Device Status/Telemetry
- Remote Database Access
- Automatic Database Transactions
- Geolocation
- Instant Messaging

LTE Overview

- Advanced antenna support
- ** Truly Open Standards**
- Commercial Scale Economies
- Being Deployed in the US 700 MHz Band (Commercial and Public Safety Broadband Spectrum)
- Seamless Roaming onto Commercial Networks

Lowest Delays & Highest Data Rates
LTE: Public Safety Voice Services

Unit-to-Unit Voice

Small Group Push-to-Talk

Interoperability with Legacy Land Mobile Radio

Large Group Push-to-Talk

Mission-Critical Push-to-Talk

Broadcast/Multicast

Dual-Mode Device (P25+LTE)
LTE Main Features

• High Speed Data in High Mobility Environments
• Optimized for Interactive IP applications
  • Always-on Connection
  • Fast Call Setup
  • Low Data Delay
• Enhancements for Public Safety
  • Pre-emption, Prioritization, Network Control
• Advanced antenna support
LTE: Incident, Day-to-Day & Planned Operations

Real-Time Situational Awareness
- Video
- Images
- Messaging
- License Plate Recognition Feeds

Multi-Agency, Multi-Jurisdiction Response
- Team Coordination

Remote Office
- Evidence Collection
- Remote Form Entry
- Access to Databases

Next-Gen 911
- Images, Text Videos

Medical Telemetry
- Streaming Data

LTE: An Essential Tool for Public Safety
5 Thoughts for Today:

1. **Broadband**: will be the key change agent for public safety communications and government services. Video will be the key application.

2. **Network Transformation**: movement from analog to digital communications allowing the convergence of data, video and voice communications, as well as advanced IP based applications such as video collaboration, image transfers and information sharing.

3. **Interoperability**: is not just communications, it will enhance interagency cooperation and eliminate jurisdictional boundaries to improve incident management and first responder effectiveness. Interoperability is not just for special events, 97% of interoperability is day to day use. Dramatic shift in wireless communications usage.

4. **Operational Support Systems**: mission-critical networks are becoming more complex and will require up to 5-9’s reliability. Mission-critical networks need to work in some of the most extreme environments. Hurricanes, floods, earthquakes and other natural or man-made disasters. OSS will be a critical success factor.

5. **Open Systems**: increase use of standards based systems to insure interoperability between different systems, different agencies and different vendors.
The Challenge

First Responders need **access to information in real-time**, requiring wireless broadband network to carry bandwidth-intensive applications.

- First Responders increasingly require access to high-speed data communications for:
  - real-time video surveillance
  - mobile interactive video
  - remote database access
- Supplement voice networks & “radio” devices with mobile broadband networks and devices.

- Enhance responsiveness and improve reaction time during emergencies.
  - Ensure integrated communications across multiple agencies in order to:
    - enhance information sharing
    - facilitate coordinated intervention in emergencies

How do publicly funded First Responders agencies deploy a wireless broadband network meeting their specific requirements, while limiting **costs** and using their **resources** effectively?
Project 25 (P25) Voice Interoperability

- Preserves Voice Quality
- Supports end-to-end encryption
- Conveys associated signaling (e.g., talking party ID)
- Supports coordination of floor control
- Allows incorporation of new air-interfaces
Conclusion

LTE Networks deliver a single unified experience regardless of location or device

• Increase the speed and precision of critical decision-making processes with LTE

• Drive innovative next-generation public safety applications and technologies to transform first responder’s operational effectiveness

• Leverage commercial economies of scale, mitigate risk and improve efficiency through the application of LTE in accordance with global and public safety standards
Possibilities for the future

GD300

The General Dynamics Itronix GD300 combines commercial global positioning and communications technology with battlefield-rugged computing. The fully rugged, arm- or chest-worn computer weighs less than 8 ounces and operates like an ultra-sensitive commercial GPS unit or, with the click of a cable, interfaces with tactical radios for secure access to the tactical network.

Hosting the open architecture, Android™-based operating system, the GD300 easily accommodates current and emerging applications for warfighters at all command levels.

- Lightweight, wearable computer providing real-time situation awareness
- Ultrasensitive GPS for signal acquisition where you need it most
- Fully ruggedized for the harshest environments
- Compatible with tactical and commercial radios via a simple cable connection
AT THE SPEED OF IDEAS