

# *Broadband Wireless Applications For Public Safety*



Bernie May

Alcatel-Lucent, Senior Wireless Solutions Manager

[bmay@alcatel-lucent.com](mailto:bmay@alcatel-lucent.com)

---

## Overview: Public Safety Operations

### Emergency Preparedness

- Planning

### Emergency Response

- Real-time communications and information sharing

### Administration and Management

- Records & Reporting



CDMA enables interoperable communications and information sharing for all operational disciplines *at the local, regional, and national levels.*

# Commercial versus Public Safety Wireless



## Public Safety

Narrowband circuit-switched  
Outdated (LMR, Tetra)

Proprietary Solutions  
“Single-vendor interoperability”

Broadcast Voice  
Talk groups

<10 kbps data (if at all)  
Limited applications

Designed to worst case scenario  
Outages impact Lives



## Commercial Wireless

Wideband packet-switched  
Continuous evolution

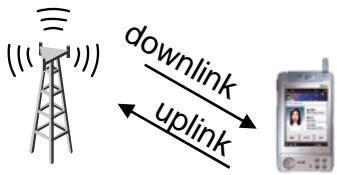
Standardized, IP based solutions  
Multi-vendor interoperability

User-to-user Voice  
Commercial grade Push-to-talk

Multi-megabit data  
Video, Multi-media messaging, ...

Designed to busiest hour  
Outages impact revenue

# Responding to Crisis -- Speed Matters



## Mugshot Download



352x375 pixels  
jpeg  
20 kbytes



287x308 pixels  
gif  
47.2 kbytes

### Cellular Digital Packet Data

12.1 kbps down  
9 kbps up

**13 secs**

### CDMA2000 1x EV-DO Rev 0

2.4 Mbps down  
153.6 kbps up

**0.067 secs**

### CDMA2000 1x EV-DO Rev A

3.1 Mbps down  
1.8 Mbps up

**0.051 secs**

## High Resolution Incident Still Photo



1400x1050 pixels  
jpeg  
140 kbytes

### Download:

**93 secs**

**0.467 secs**

**0.361 secs**

### Upload:

**124 secs**

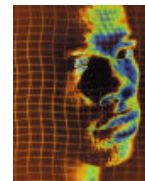
**7 secs**

**0.623 secs**

# Broadband CDMA Applications - Endless Opportunities

- Mapping/Location Based Services
  - Automatic Vehicle Location, critical infrastructure protection
- Push-to-talk
- Video Streaming – incident scenes, security
- Digital Image transfer – disaster scene, photos
- Large files transfer- records, on-line manuals, emergency protocol
- Biometrics – facial recognition
- Bioterrorism detection and response – sample analysis, plume tracking

## Biometric Services



Facial Scan



Retinal Scanners



Mobile Fingerprint

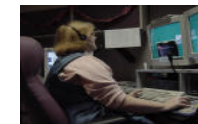
## Video Services



Real-time Car Video



Disaster Surveillance



Dispatch Centers

## Multimedia Data Collection/Retrieval



Images from site

Image from Crime Databases



Patient Monitoring



## GPS/GIS Location Based Services



Route Navigation



First Responder Tracking



Incident Mapping

# CDMA Offer for Public Safety

Leverage the advanced core technology, industry ecosystem, and economics of commercial systems

Enhance CDMA networks with features required to support the unique mission of Public Safety/Homeland Security

- Broadcast/Multicast (voice and data) for scalable, group-based communications
- High performance push-to-talk
- Priority access
- Full interworking with legacy LMR networks (voice and data) and seamless roaming with commercial networks
- Rapid deployment (portable networks)
- End-to-end security and redundancy

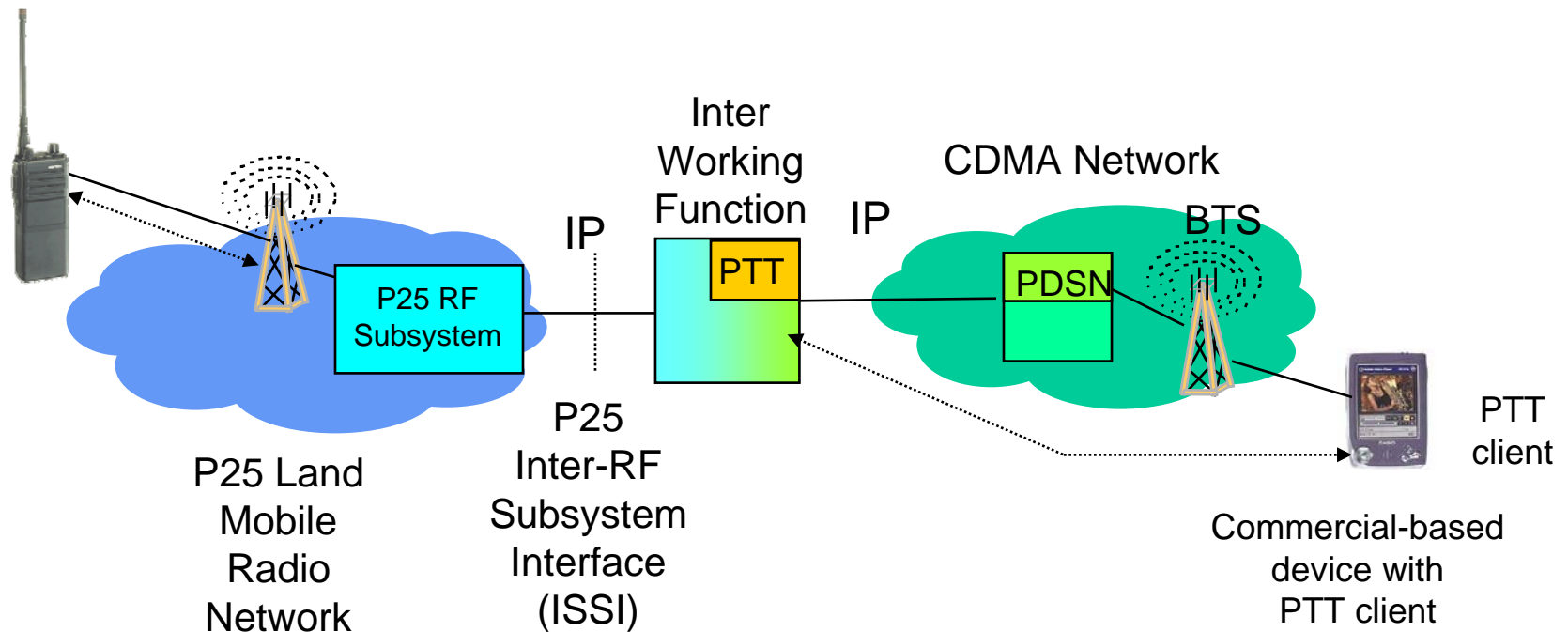


# Network Interoperability is Key

## CDMA / LMR voice and data interoperability

Leverage the P25 interop interface currently being standardized – Inter RF Subsystem Interface (ISSI)

- IP-based interface for PTT bearer and control
- Use ISSI to make cdma2000 network look like at P25 RF Subsystem – via a gateway



## The National Capital Regional Wireless Broadband Network

Washington, DC and surrounding counties in Maryland and Virginia

- Multi-agency, multi-jurisdiction, shared private network
    - ~35K users across 18 jurisdictions
  - Applications:
    - Video
    - Digital Imaging
    - Automatic Vehicle Location
    - Computer Aided Dispatch
    - Telemetry/Remote Diagnostics
  - E-mail
  - Mapping/ GIS
  - Remote Database Access
  - Records Management System
- Network
    - 700Mhz U.S. public safety spectrum. Alcatel-Lucent CDMA RevA network.
    - **Roaming agreements with commercial wireless network providers (planned)**



***First mobile broadband network for public safety in North America based upon commercially-standardized technologies.***

# Conclusions

---

## Commercial CDMA Technology: Significant, immediate impact for Public Safety

- Secure, high speed data, video, voice, push-to-talk
- Open, standards based solution - Economies of scale
- Vast industry ecosystem providing ubiquitous choice of devices and applications
- Full interoperability with all IP, PSTN, and legacy networks
- Advanced, proven deployments around the world
- Evolution aligned with evolving needs of public safety

The background is a deep blue with a fine, light-colored grid pattern. Several bright, glowing light streaks and curved lines sweep across the frame, creating a sense of motion and depth. The overall aesthetic is clean, modern, and technological.

[www.alcatel-lucent.com](http://www.alcatel-lucent.com)