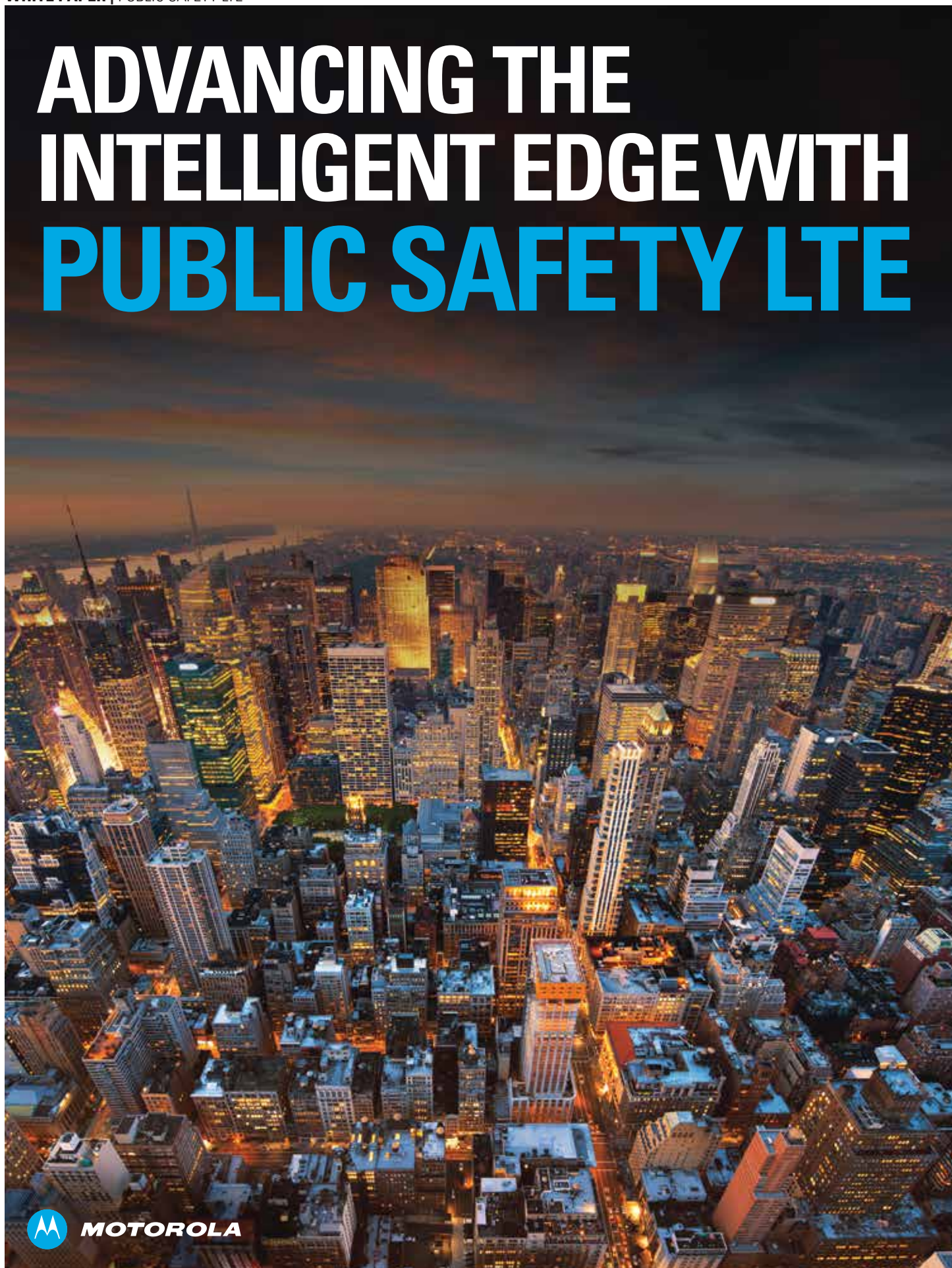


# ADVANCING THE INTELLIGENT EDGE WITH PUBLIC SAFETY LTE



# BROADBAND IS THE NEW REALITY

High-speed data is driving the communication landscape and penetrating every part of the world. One third of the global population has active mobile broadband subscriptions with a 3G or 4G connection, up 40 percent in just three years.<sup>1</sup>

Whether streaming video or uploading photos, most citizens carry a more powerful, data-enabled device than first responders. If public safety agencies don't level the playing field with real-time multimedia data, they'll get left behind.

As criminals become more cunning and terrorists more tech-savvy, sharing mission critical data is imperative. Public safety communities around the world are seeing the need for more complex data that land mobile radio (LMR) networks can't support by themselves. A growing number of countries are enhancing their communications platform to advance the intelligent edge with the formidable power of wireless long term evolution (LTE) broadband.

## DATA IS THE CRITICAL CHOICE BEYOND VOICE

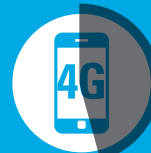
Real-time surveillance video. High-resolution photos. Bi-directional vehicular video. Dynamic mapping and routing. Remote medical records. All this data is mission critical for public safety to carry out everyday and emergency operations – from the detective on a covert operation to the officer pursuing a stolen vehicle.

In many incidents, voice communication is not enough. The right data can be more concise while telling a more complete story. Converged with mission critical voice, secure, streaming multimedia broadband empowers first responders with the real-time information they need to improve situational awareness and better prepare for the incident.

### DID YOU KNOW?



**ONE THIRD**  
OF THE WORLD HAS MOBILE BROADBAND WITH A 3G OR 4G CONNECTION<sup>1</sup>



**ALMOST HALF**  
OF MOBILE DATA TRAFFIC WILL BE 4G BY 2017<sup>2</sup>



**TWO THIRDS**  
OF MOBILE TRAFFIC WILL BE VIDEO BY 2017<sup>3</sup>

**70%**

SAY DATA MESSAGES ARE AS IMPORTANT AS VOICE

**67%**

WANT HIGH-SPEED DATA ACCESS IN THE FIELD

**55%**

USE MOBILE IN-VEHICLE CAMERA SYSTEMS

**49%**

HAVE A FIXED VIDEO SURVEILLANCE SYSTEM

**22%**

USE WEARABLE CAMERAS<sup>4</sup>

Motorola Solutions 2014 Public Safety Industry Study





# PRIVATE LTE IS THE DIFFERENCE BETWEEN “ALWAYS AVAILABLE” AND “OFTEN NOT”

TODAY'S PUBLIC CARRIER NETWORKS ARE ILL-EQUIPPED TO HANDLE THE VOLUME AND VELOCITY OF CALLS THAT OCCUR IN THE HOURS – AND EVEN DAYS – AFTER A PLANNED EVENT OR UNTHINKABLE EMERGENCY.



## TERRORIST THREAT

In September 2014, intelligence obtained by Western countries pointed toward a potential plot by Pakistan-based militants to launch coordinated terrorist attacks in several European countries, including Britain, France and Germany. The British government acknowledged the threat was “severe”.<sup>8</sup>



## FERRY DISASTER

A South Korean ferry, which sank in April 2014, left more than 300 people dead or missing. The failure by multiple agencies to communicate and rescue survivors spurred discussion of the construction of a wireless communications network for national disasters.<sup>7</sup>



## NATURAL CATASTROPHE

When Superstorm Sandy roared across the northeastern coast of the U.S. in October 2012, 25 percent of the region's commercial cellular sites were knocked out of service. Almost 10 percent remained down a week later.<sup>6</sup>



## MASSIVE EARTHQUAKE

The catastrophic 2010 Haiti earthquake impacted three million people, with an estimated 230,000 people identified as dead, 300,000 injured and 1,000,000 homeless. Communication systems damaged by the earthquake significantly hampered rescue and aid efforts.<sup>5</sup>

# IMPROVE RESPONSE WITH AN OPTIMIZED NETWORK, DESIGNED FOR PUBLIC SAFETY

First responders need a reliable, resilient, optimized wireless broadband network to carry out their mission. Not only must they communicate instantly without interruption, but agencies must collect and filter through all the information streaming in from the community. All while citizens consume more bandwidth.

What's more, interoperability among agencies and secure transmissions are critical to an effective coordinated response. Given the rise in cellular traffic and data consumption by citizens, an optimized Public Safety LTE network is needed to assure priority communications the moment they're needed. An optimized network also provides end-to-end encryption, safeguarding sensitive information transmitted over the air wirelessly.

## DATA-HUNGRY CITIZENS TODAY

**40%**  
OF MOBILE  
SUBSCRIBERS  
ACCESS SOCIAL  
MEDIA DAILY



### CITIZENS ACCESSING VIDEO USING MOBILE DATA<sup>10</sup>:

**54.6% EUROPE**

**50.7% ASIA PACIFIC**

**52% NORTH AMERICA**

**50% MIDDLE EAST**

# PUBLIC SAFETY LTE DELIVERS A HIGH DEGREE OF THE 5 C's



## COVERAGE WITHOUT COMPROMISE

Public Safety LTE networks handle peak usage and prioritize system traffic to the end of coverage. Extend network coverage during disaster recovery situations and optimize coverage at the edge with LTE deployable trailers. Because first responders can instantly access video, photos, maps and more, they're better prepared to arrive at a dangerous crime scene or search patient medical records from a moving ambulance.



## CAPACITY FOR IT ALL

Capacity isn't only critical for emergencies, it's essential for day-to-day operations. When thousands of people converge at sports venues, concerts, festivals and rallies, mobile capacity must be sufficient and robust to keep everyone safe.



## CAPABILITIES TO IMPROVE SITUATIONAL AWARENESS

When public safety personnel have a unified picture of what's unfolding, they are better equipped to respond. High-speed data, location information, photos and streaming video can significantly improve collaboration and outcomes.



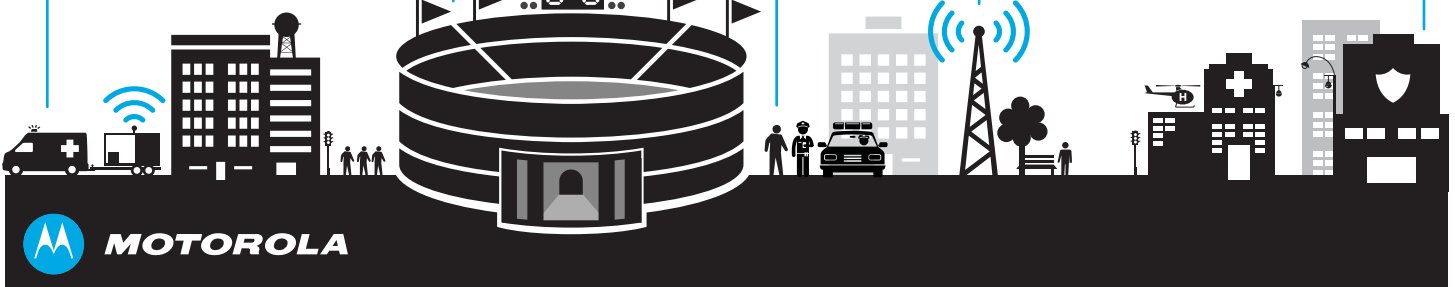
## CONTROL OF YOUR COMMUNICATIONS

An optimized Public Safety LTE network gives you greater control over your system, software and devices. You decide who accesses the system, what changes need to be made and when, what the status of all users is, and how priority gets dynamically assigned to users.



## COST SAVINGS ON A LARGE SCALE

An optimized Public Safety LTE network that saves money via economies of scale on devices and infrastructure partnership where needed.



# KEY CRITERIA FOR CHOOSING A PUBLIC SAFETY LTE SOLUTION

TODAY, THE MOST ADVANCED MOBILE BROADBAND TECHNOLOGIES ON THE PLANET ARE AVAILABLE TO PUBLIC SAFETY. THESE OPTIMIZED LTE NETWORKS ARE BASED ON A MISSION CRITICAL ARCHITECTURE. THEY PROVIDE RICH MEDIA INFORMATION ANYTIME, ANYWHERE; ARE DESIGNED TO THE STANDARDS BUILT FOR PUBLIC SAFETY; AND ARE BACKED BY EXPERIENCE AND VISION.

## 1. MISSION CRITICAL PERFORMANCE

Make sure your LTE solution is secure, available and deployable; the site must be hardened and geo-redundant in case the network fails due to natural disasters and other hazards.

**ALWAYS CONNECTED:** Personnel can roam seamlessly to the best network for them – across standards-based radio and broadband, private or public.

**TRUSTED SECURITY:** Personnel in the field can query, see and share information due to hardware-based, end-to-end, enhanced encryption.

## 2. DYNAMIC INTELLIGENCE

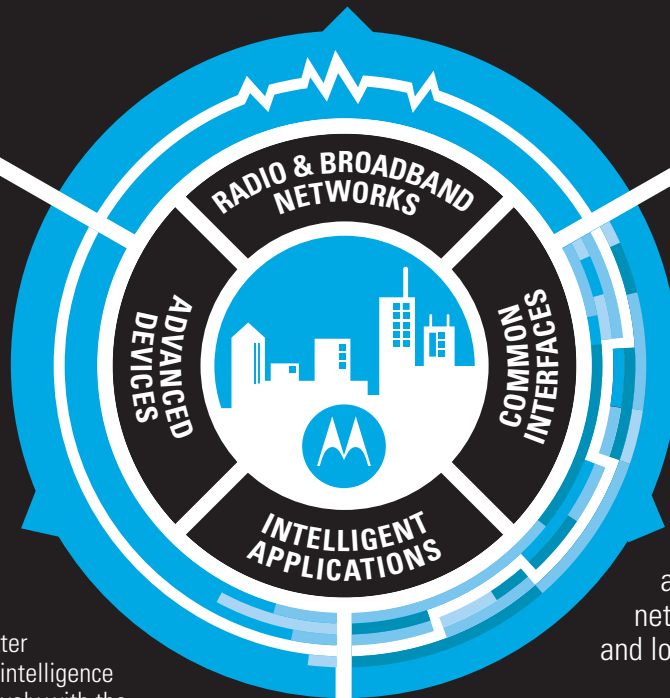
Your LTE solution should prioritize and pre-empt users so those who need to access the network first receive highest priority.

### **PRIORITY & PRE-EMPTION:**

The responder team can make better decisions with the help of critical intelligence and deploy resources more effectively with the help of analytics.

### **CONTEXT-AWARE COMMUNICATIONS:**

A responder's environment, incident role and personal context are used to prioritize network resources and optimize their user interface.



## 3. UNIFIED DATA

Your LTE solution should provide a single operating view (United Network Services presence, location, messaging and applications) and unified management of the network, devices/SIM, provision and logging.

**UNIFIED MANAGEMENT:** Network managers have visibility and control across the unified communications network, applications and fleet of devices.

**ONE OPERATING VIEW:** All responders see one view based on common location, tracking, presence, video feeds and other data sources to enable better collaborative actions.

# TOP 5 KEY AREAS OF EXPERTISE FOR A PRIVATE LTE PROVIDER

- 

**1. TECHNOLOGY LEADER**  
with depth and breadth of experience to integrate P25 LMR communications with LTE broadband
- 

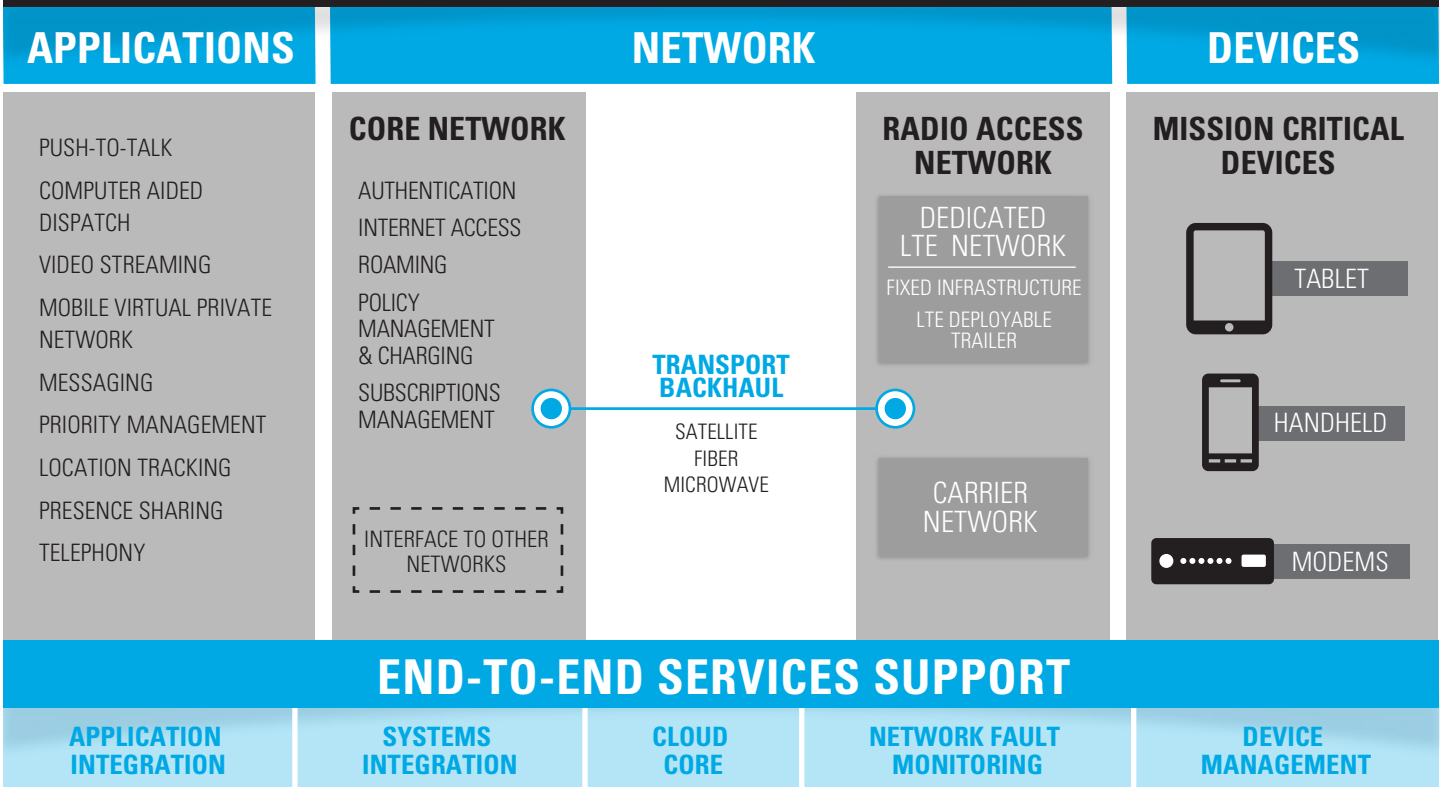
**2. END-TO-END SOLUTIONS EXPERT**  
who knows public safety communication solutions, including the process, network infrastructure, devices, user experience and applications
- 

**3. PUBLIC SAFETY INTEGRATOR**  
who provides a full suite of products, services and strategic partnerships with the world's leading commercial carriers
- 

**4. INTIMATE WORKING KNOWLEDGE**  
of all aspects of LMR and Public Safety LTE standards development and next-generation functionality
- 

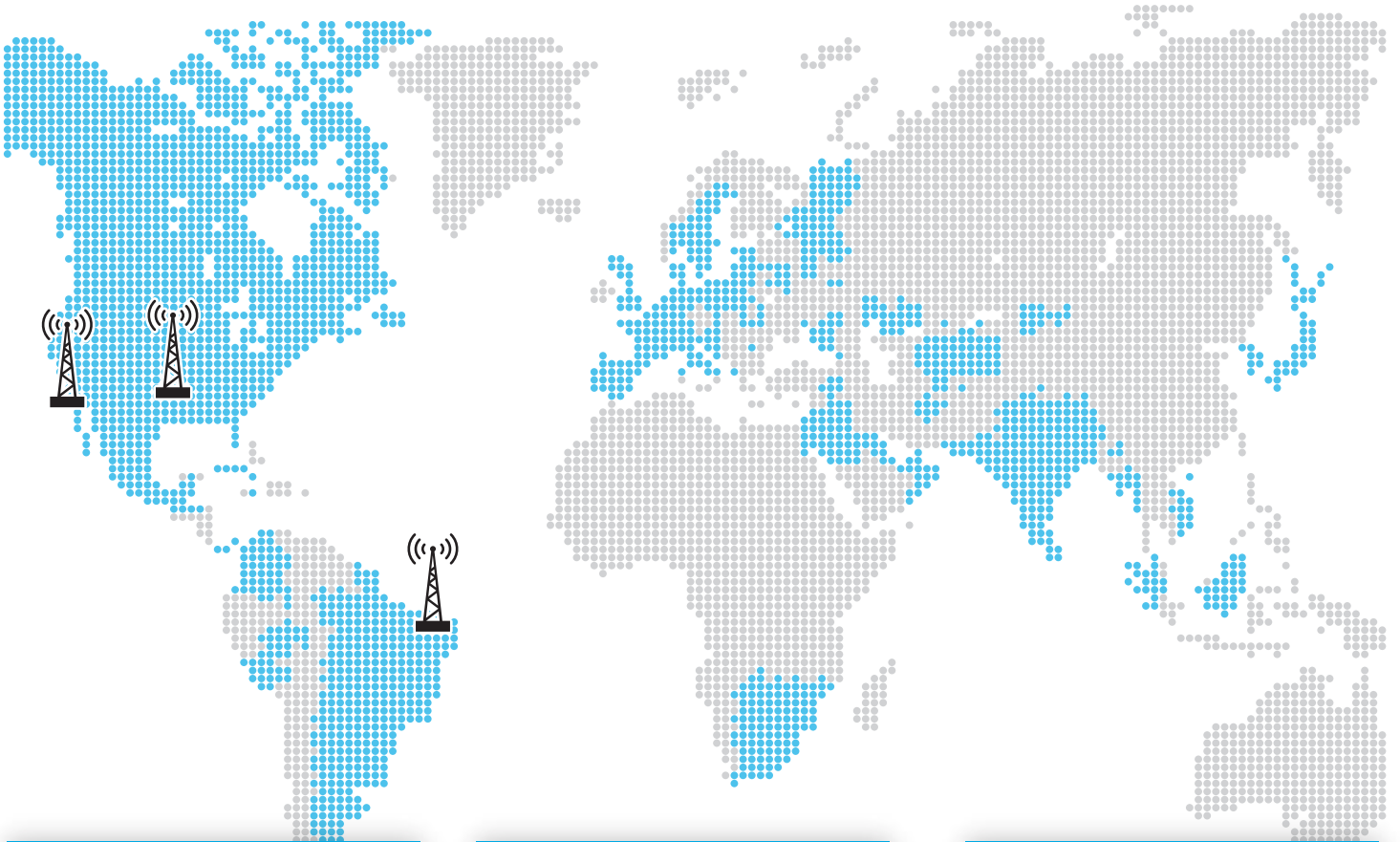
**5. PROVEN GLOBAL REACH**  
and trusted advisor who has built hundreds of standards-based, public safety based networks throughout the world

## ECOSYSTEM OF THE IDEAL LTE PROVIDER





# MORE THAN 30 COUNTRIES ARE PURSUING PUBLIC SAFETY LTE



## U.S. – LOS ANGELES, CALIFORNIA

The Los Angeles Regional Interoperable Communication System Authority (LA-RICS) is developing a 231-site regional LTE network to deliver mission critical data communications to over 34,000 public safety professionals and more than 80 agencies in the region. The high-speed 4G LTE network complements their new P25 Phase 2 TDMA LMR network and will initially deploy over 1000 LTE vehicle modems.

## U.S. – HARRIS COUNTY, TEXAS

In 2012, Harris County expanded their LTE network with a regional core, hosting neighboring cities and cities across state lines. The complex integration works across the P25 LMR network, LTE network applications and devices. It includes real-time video intelligence and broadband push-to-talk between the LTE and ASTRO® P25 radio networks.

## BRAZIL

The Brazilian Army is evaluating Public Safety LTE in Brasilia and Rio de Janeiro using interoperable PTT and video services. The data network lives alongside their Motorola P25 LMR system. Commanders viewed critical video footage in real time during protests around the 2013 Confederations Cup soccer event. The LTE network was tested successfully during the 2014 World Cup.

# PUBLIC SAFETY LTE IS TAKING OFF WHERE LMR LEAVES OFF

LMR

LTE

## WHY A PRIVATE, RATHER THAN COMMERCIAL, LTE NETWORK?

Commercial networks are not designed for worst-case, public safety demands. They become congested during heavy use, severe weather and other extremes. When lives are on the line, mission critical data can't wait. An optimized network has the reliability, interoperability and speed that public safety agencies need.

## WHAT IF WE DON'T HAVE ANY DEDICATED PRIVATE SPECTRUM?

An end-to-end solution provider will work with a commercial carrier for your benefit. There are at least three deployment models for Public Safety LTE in various spectrum situations.

## WHICH LTE DEPLOYMENT MODEL IS BEST FOR US?

Consult with your provider to discuss the pros and cons of each deployment option. You'll want to look at Private (dedicated spectrum), which you own and operate; Partnership (Private-Public shared spectrum), which lets you carve out optimized LTE on a shared system; and Public (MVNO and no spectrum) where you contract with a mobile virtual network operator who handles access, rates and services in order to enable optimized public safety applications.

## WE USE LMR TECHNOLOGY. WHY ADD LTE?

LMR and LTE are significantly better together. LMR is essential for mission critical voice communications, which LTE networks can't provide yet. For now, broadband data will continue to complement, rather than replace, mission critical voice.

## WE HAVE INVESTED IN LMR. WHAT SHOULD WE DO?

You can re-use a significant portion of your LMR investments. This includes sites, servers, IT plans, provisioning and logging. Fault and performance management can be implemented as converged solutions.

## WHAT ABOUT MISSION CRITICAL VOICE OVER LTE? WHEN WILL THAT HAPPEN?

Creating a Public Safety LTE network is a complex, long-term process. Motorola is working with all standards bodies on the evolution that will enable capabilities that LTE can't do today and LMR can. These include direct mode, group communication, fast call setup and more.

## WHAT SHOULD WE DO NOW?

Start by working with a trusted advisor who intimately understands the needs of public safety and specializes in using your existing technology to integrate the far-reaching power of mission critical data. Look for an end-to-end provider with the products, devices, strategic partnerships, managed services and support for a flexible and robust Public Safety LTE network.

## SOURCES

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8. "U.S. Issues Europe Travel Alert Over Terror Threat," Radio Free Europe, September 24, 2014
9. "Lapses in communication hampered police response, says Little India riot COI," Channel NewsAsia, June 30, 2014
10. "Citrix Mobile Analytics Report," Citrix, September 2014

TO FIND OUT MORE ABOUT HOW MOTOROLA IS HELPING CREATE SAFER CITIES AND THRIVING COMMUNITIES AROUND THE WORLD, VISIT [MOTOROLASOLUTIONS.COM/PUBLICSAFETYLTE](http://MOTOROLASOLUTIONS.COM/PUBLICSAFETYLTE) OR [MOTOROLASOLUTIONS.COM/SAFERCITIES](http://MOTOROLASOLUTIONS.COM/SAFERCITIES)

