



# ICTs for disaster response – services and applications

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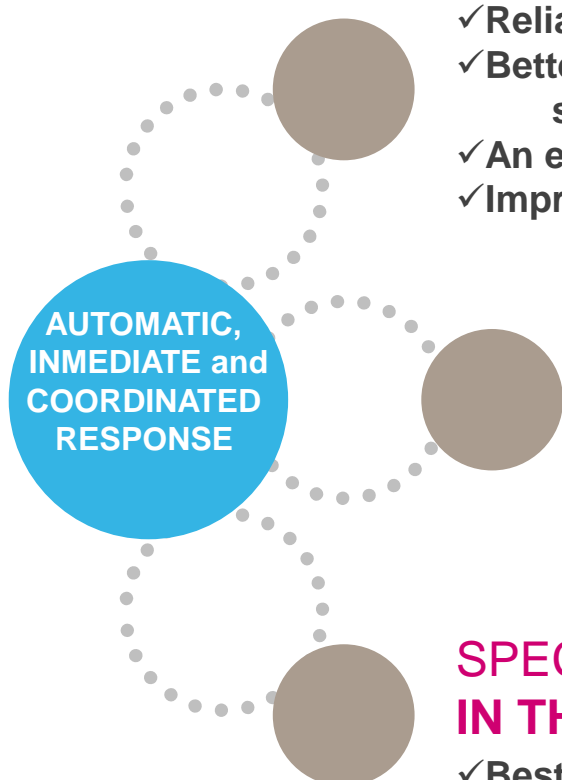
# NEW and OLD THREATS, NEW CHALLENGES... NEED NEW APPROACHES...

- The need to effectively undertake action in the field of security and disaster response has been emphasized by a series of events caused by terrorist activity, such as in New York, Madrid, and London, or by natural disasters, such as the hurricanes, tsunamis, and earthquakes,....



*In this new environment, Governments are strained to take all necessary actions to protect their citizens and critical infrastructures by investing in mission critical networks, applications, and design expertise*

# MAJOR INCIDENTS AND CRISES REQUIRE



## IP/MPLS NETWORK

- ✓ A step towards network convergence
- ✓ Reliable, flexible, scalable, manageable
- ✓ Better bandwidth usage, integrated network, simplified operations and maintenance, reduced OPEX
- ✓ An enabler for highly available voice, video, and data services
- ✓ Improves safety and efficiency

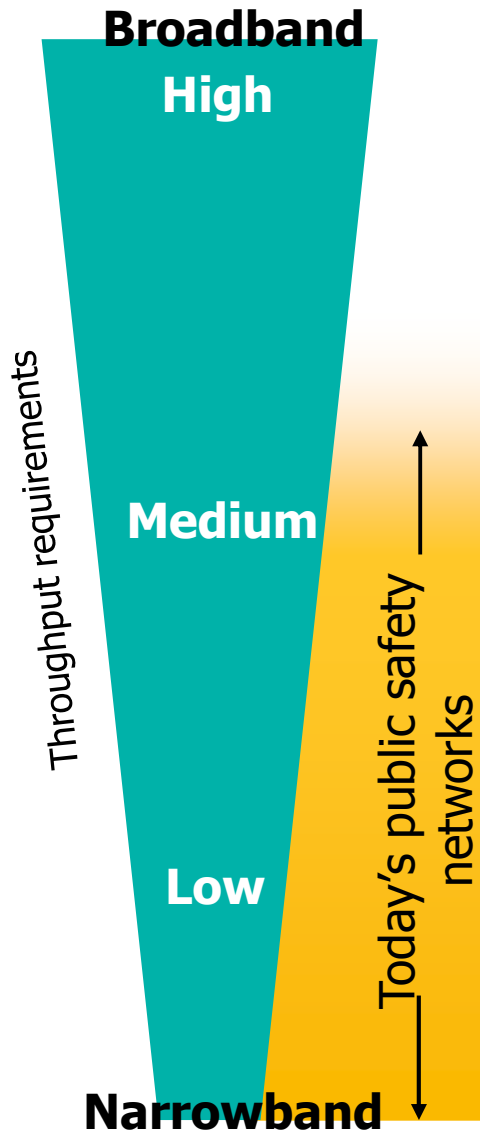
## LTE TECHNOLOGY

- ✓ Higher throughput,
- ✓ Reduced latency,
- ✓ Better quality of service
- ✓ All IP

## SPECIFIC PORTION OF SPECTRUM IN THE 700 MHz BAND

- ✓ Best propagation that gives great coverage with the best capacity given by LTE

# PUBLIC SAFETY DATA\* APPLICATIONS

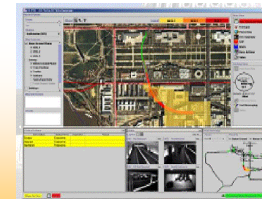


**Full-duplex video conferencing**  
 ("see what I see")



**Near-real-time video streaming**

**Bulk file transfer**

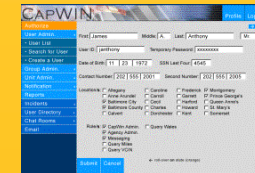


**e-mail**



**Web**

**Push-to-talk, VoIP**



**Device status/telemetry**

**Remote database access**

**Automatic database transactions**

**Geolocation**

**Instant messaging**

\*"Statement of Requirements for Public Safety Communications & Interoperability," SAFECOM Program, Department of Homeland Security, Version 1.1, January 26, 2006

# BROADBAND WIRELESS (LTE): INCIDENT, DAY-to-DAY AND PLANNED OPERATIONS

## Real-Time Situational Awareness

Video  
Images  
Messaging



Enhanced Officer & Public Safety

## Remote Office

Evidence Collection  
Remote Form Entry  
Access to Databases

Increased Street Time



## Next-Gen 911/190

Images, Text  
Videos



Life-saving Information

## Multi-Agency, Multi-Jurisdictional Response

Team Coordination



Full Interoperability

## Medical Telemetry

Streaming Data



**LTE: An Essential Tool for Public Safety and Emergency Situations**

# ONE OF THE BIGGEST GOVERNMENT CONCERNS



✓ To provide  
**SAFETY ALERTS**

✓ To protect  
the **CITIZENS**



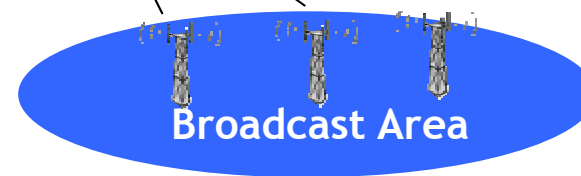
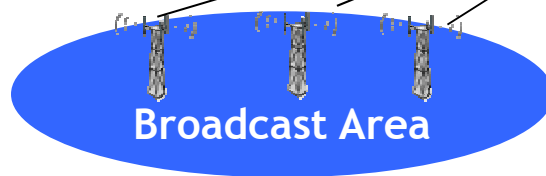
# Broadcast SMS – the way to inform responsibly



Immediate alert sent to **SPECIFIC** geographical **LOCATION**



Wireless Network



.....  
AT THE SPEED OF IDEAS

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AT  
THE  
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OF  
IDEAS

.....  
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# STRATEGIC NETWORKS

## 5 Key Take-Aways

**1. Broadband:** High Speed Data will be the most important trend in the coming years in Homeland Security: Homeland Security Agents need more information and need to get that data as quickly as possible to help them do their job more efficiently and safely.

**2. Network Transformation:** IP/MPLS networks enable the transport of any type of information (HUMINT, SIGINT, COMINT, ELINT, IMINT, status reports, unit positions, logistic situations, etc.) with the required levels of priority, security and reliability. These networks allow Machine-to-Machine, Person-to-Person, Machine-to-Person collaboration.

**3. Interoperability:** Providing high-quality information that is delivered at the right time to the appropriate end-user, anytime, anywhere, be they part of forces, command centers, allies or civilian agencies, NGOs, etc. The increased use of standards-based systems facilitates interoperability between different systems, different agencies, and different vendors.

**4. Operational Support Systems:** Translating the new ways of working, operational processes, and changes to doctrine in the Operational Support Systems, Network Operations Center and Security Operations Center.

**5. Open Approach:** Open standards, open architectures and COTS systems introduce opportunities for common solutions, often more cost effectively.



# IP/MPLS: NETWORK TRANSFORMATION

## Why Change?

- ✓ The network needs to quickly adapt to new services
- ✓ Need to enable “Ethernet Backhaul” by creating a native transport network
- ✓ New technology can enhance officer response and citizen safety

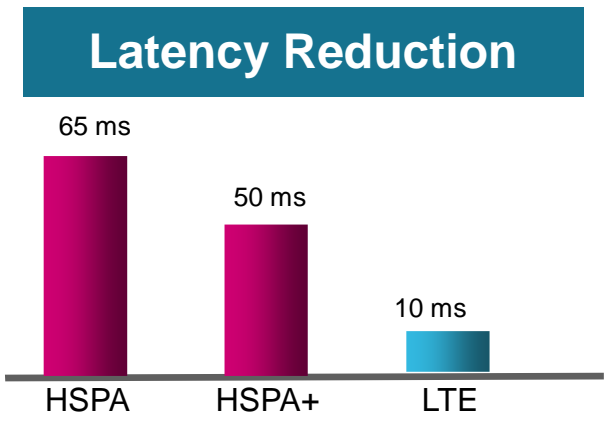
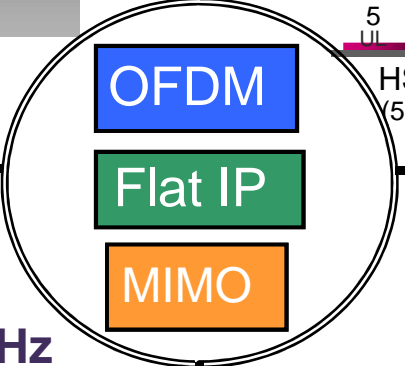
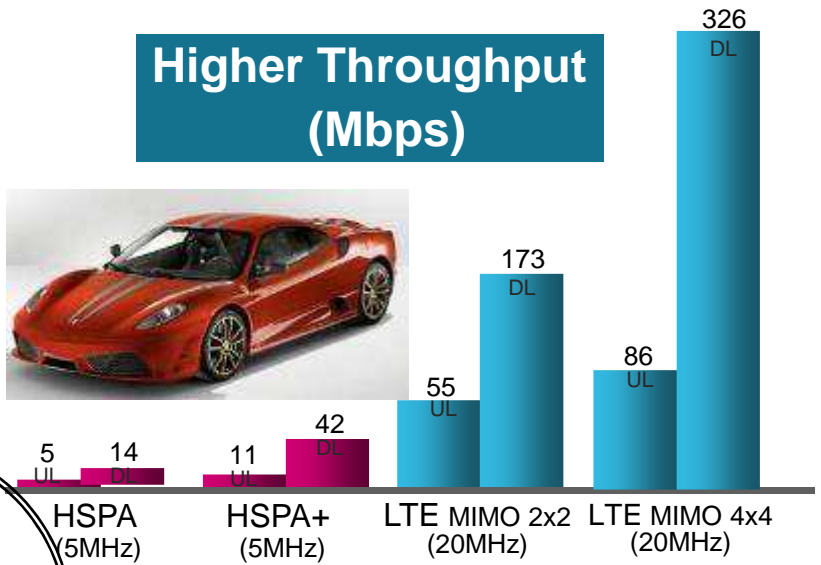
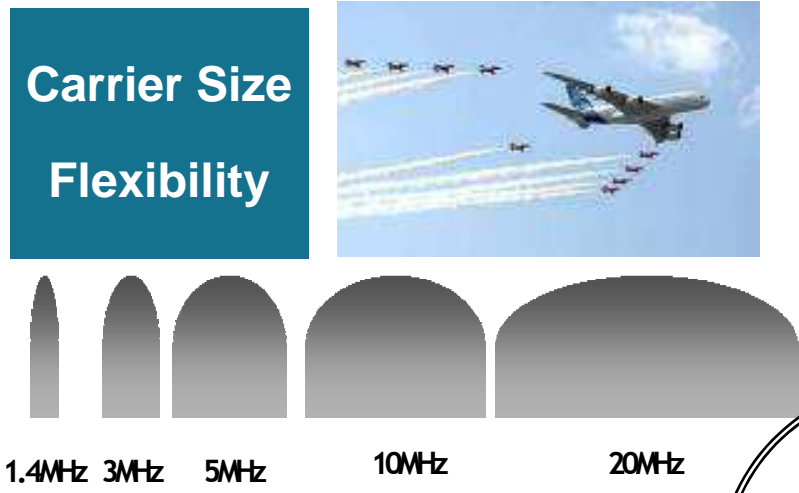
### Moving from...

- Voice over TDM circuits
- Limited video, voice and data collaboration
- Low-speed data collection and LMR over TDM circuits.
- Limited VPN services
- Limited QoS implementation.
- Best effort IP, reliable TDM.

### To...

- Voice over IP with rich features and functionalities
- Full and instantaneous video, voice and data collaboration tools
- Data collections and LMR circuits using IP/Ethernet
- Rich and scalable VPN services
- IP/MPLS network with sophisticated QoS implementation supporting multiple services

# 4G - LTE



# LTE - INFORMATION SHARING EFFICIENCY

Use case: When there is a need to see to identify

- Broadband (LTE) provides
  - High throughput for very fast transfer of pictures



Transfer delay	High res picture (2MB)
TETRA Packet Data	~114 minutes
TEDS (50 kHz)	~3 minutes 40 seconds
LTE (2x5 MHz)	~3 seconds
LTE (2x10 MHz)	~1.5 seconds

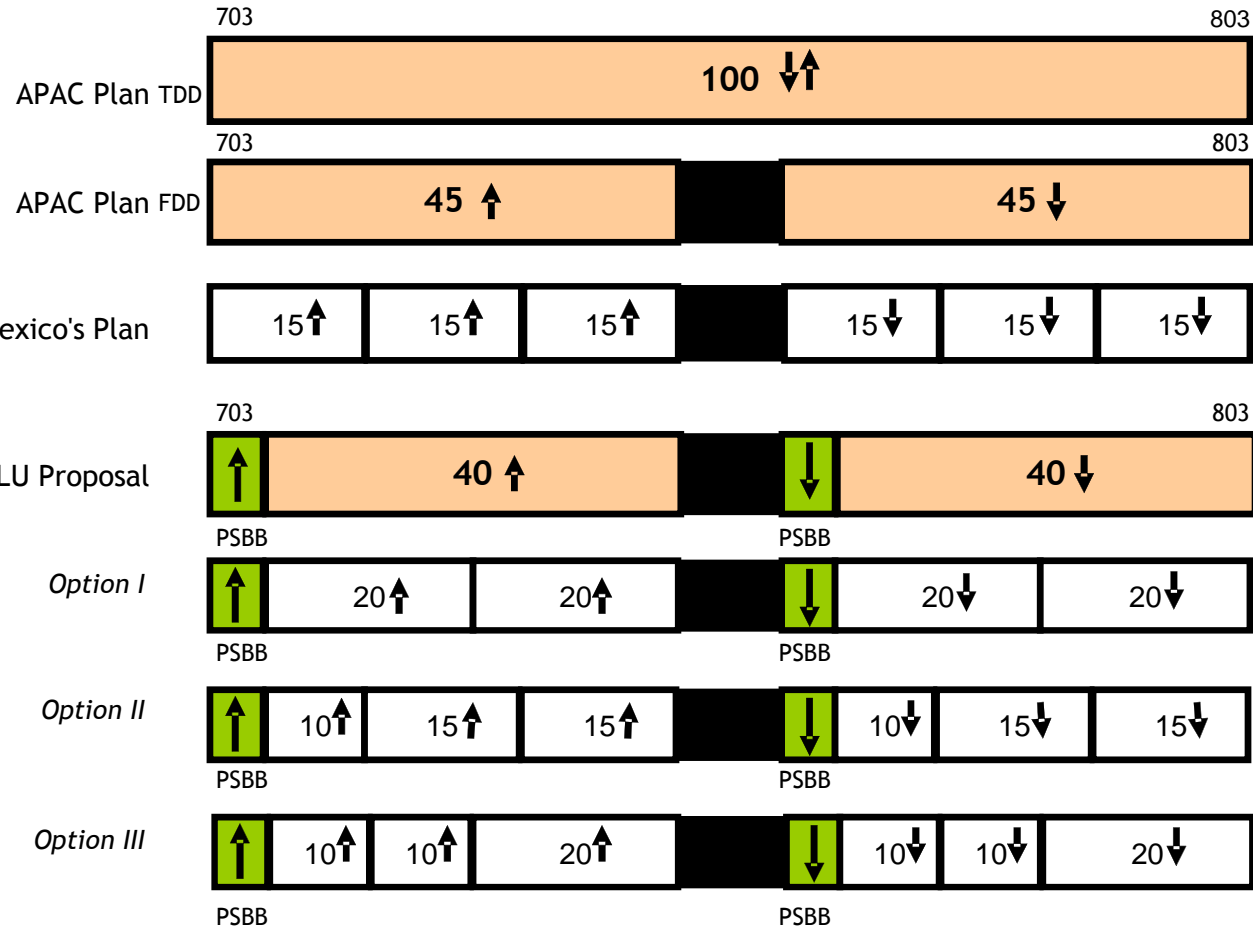
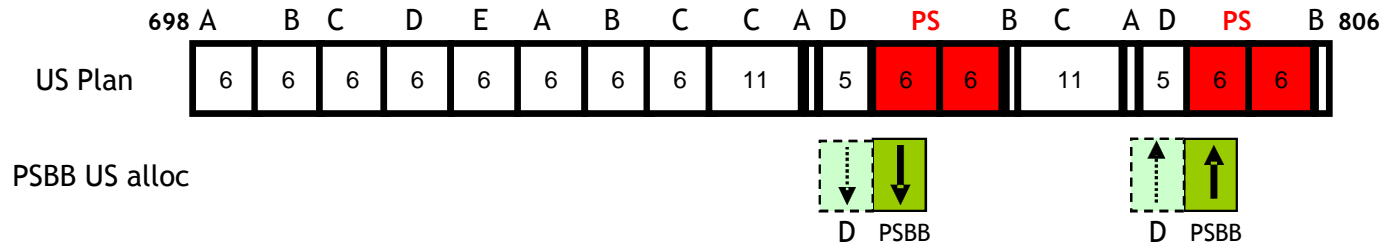
Information is obsolete and useless

Information is useful

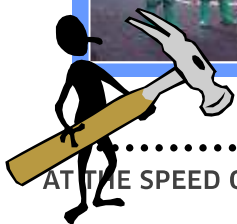
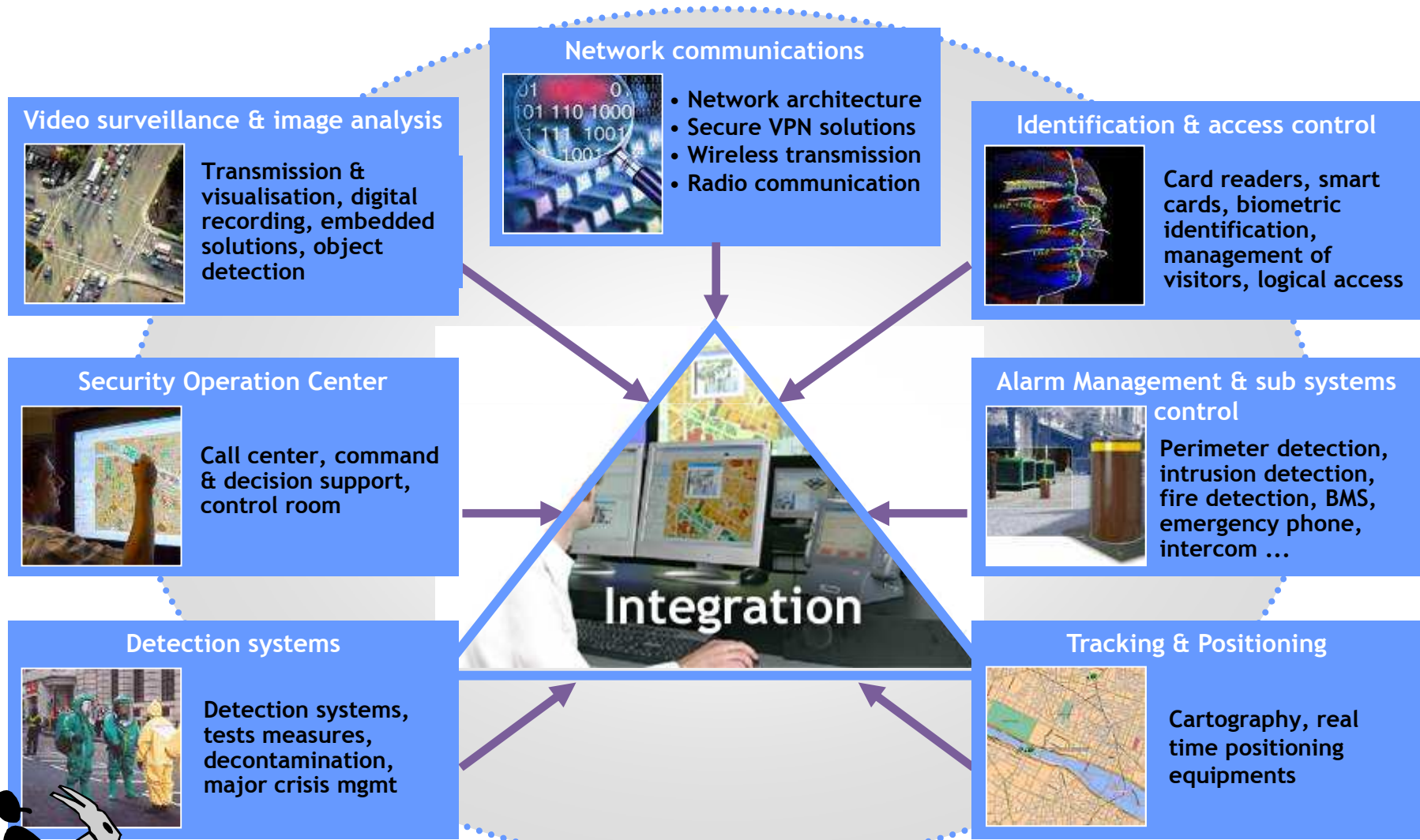


**A picture is worth 2,000 words!  
It can be transmitted in real time with LTE**

# PUBLIC SAFETY BANDS OPTIONS IN THE 700 MHz SPECTRUM

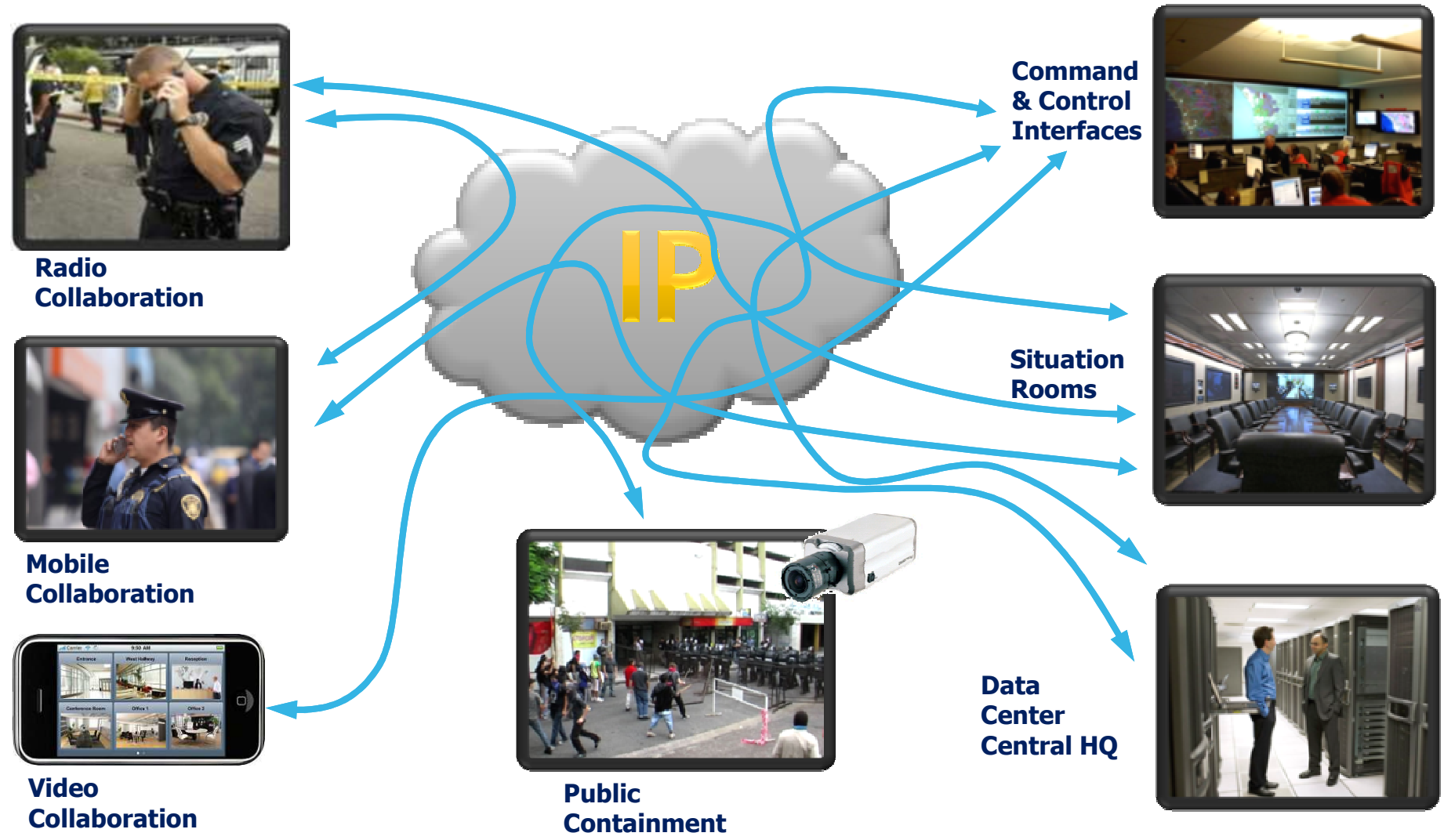


# INTEGRATION IS MANDATORY



AT THE SPEED OF IDEAS

# EXCHANGE OF INFORMATION THROUGH IP NETWORKS



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