

CASSIDIAN COMMUNICATIONS

The Next-Generation Public Safety Communications Ecosystem

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Overview

We will explore the ways in which NG9-1-1, LTE, P25, converged voice/data/multimedia communications, cohesively functioning in unison, are altering Public Safety Communications as we have traditionally known them.

Learn of the **Next-Generation Public Safety Communications Ecosystem**, its components, and how it completely overhauls the business model of the PSAP through true interoperability, situational awareness and common operating picture.

The Ecosystem includes a new breed of interoperable applications and comprehensive incident management capabilities, including virtualization, mobility, advanced hosted data services, and an interconnected ecosystem of i3 entities, leading to new opportunities and challenges.

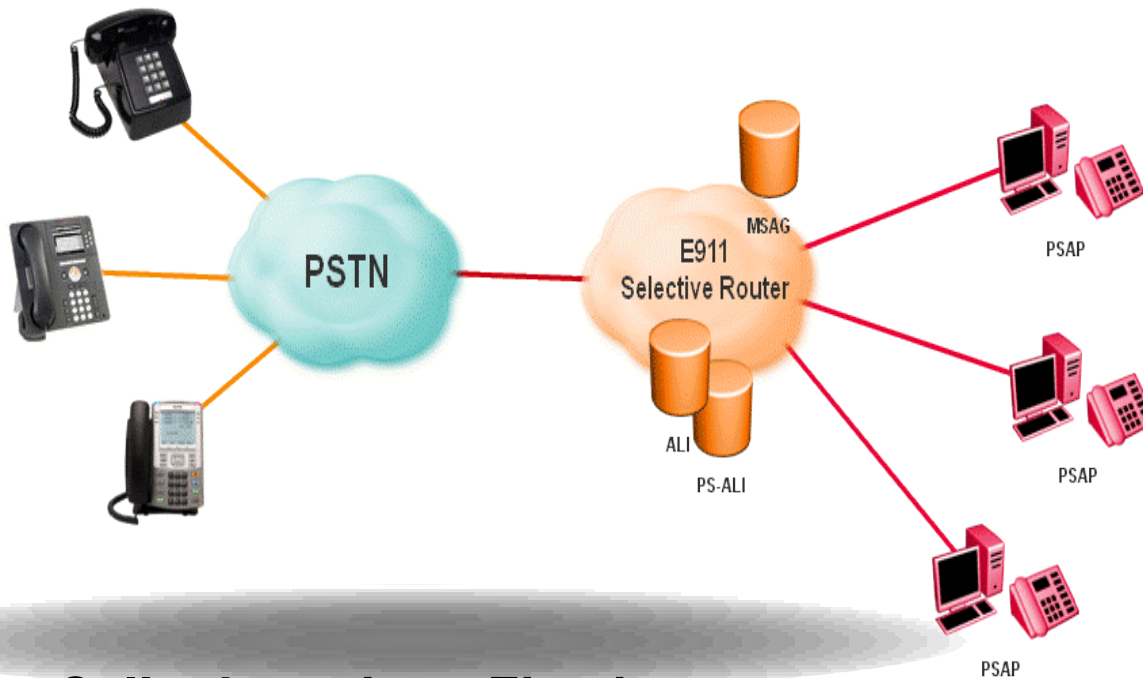
Times are Changing...

The most significant change in
Public Safety Communications
in the past 30 years is occurring
now and will continue for many years

Planning & Execution are key!

Emergency Network Design Today

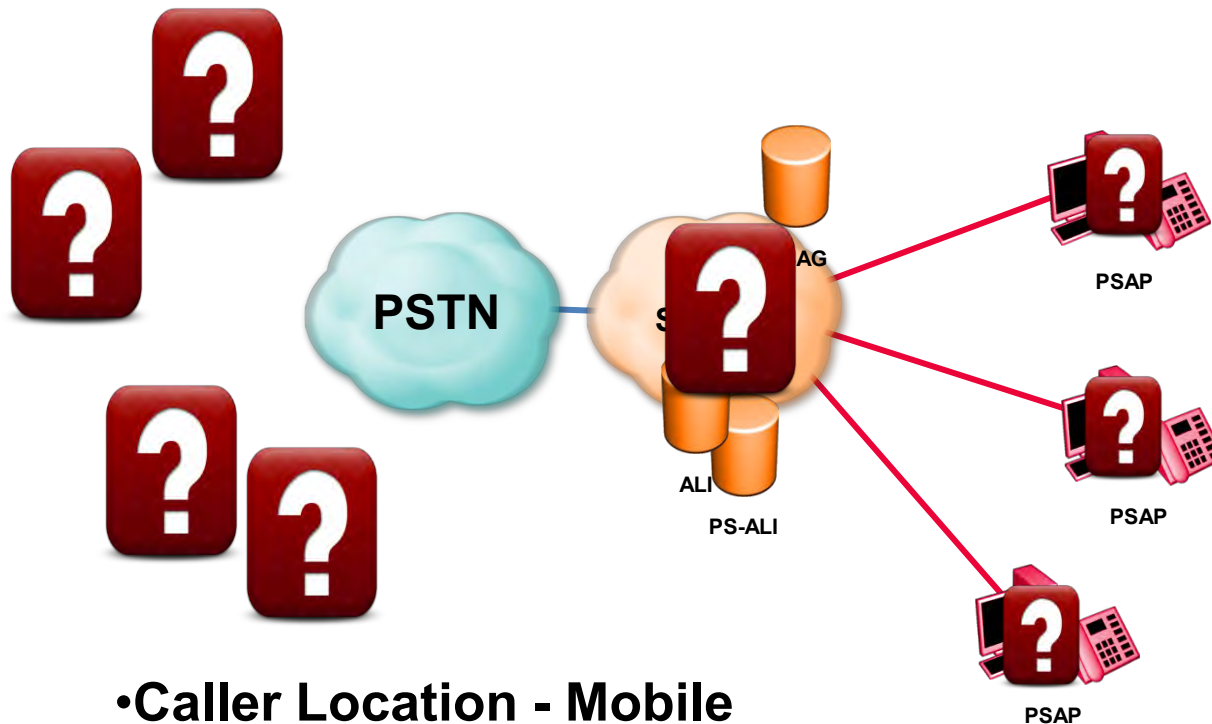
Analog technology based on fixed endpoints



- **Caller Location - Fixed**
- **Telephone Number = Location**
- **Voice Only**
- **Highly Predictable**

Emergency Calling Environment Today

Multimedia with MOBILITY



- Caller Location - Mobile
- Telephone Number \neq Location
- Multimedia
- Less Predictable



What's driving the change?

Our Mobile, Communicative Lifestyle:

SMS (text) to 9-1-1

Video, Skype, Twitter, Facebook

Mobile Workers, VoIP end-points (Soft Phones)

Dynamic Real-time Caller Location

Video Surveillance and Sensor devices



Goal

Improve Public Safety

The Key...*Interoperability*

- Improve Public Safety service delivery through cohesive, coordinated operations facilitated by the sharing of information, data and resources.
- Take advantage of Next Generation technologies and characteristics

The Key...*Flexibility*

- Capex vs. Opex
- Shared, cloud, hosted architecture

Components

What are the key components of an interoperable Public Safety environment?

Wireless (LMR)

- Ability of disparate Public Safety agencies to effectively intercommunicate over RF

Wireline / Wireless (NG9-1-1)

- Ability for call/dispatch centers to effectively intercommunicate

Sub-systems

- Ability for electronic subsystems share of information, data and/or resources

Policies/Procedures

- Policies/procedures which support collaboration (the effective use of shared information, data and resources)

Wireless

What are the key components of an interoperable LMR environment?

Standards

- P-25
- LTE

Connectivity (Spectrum)

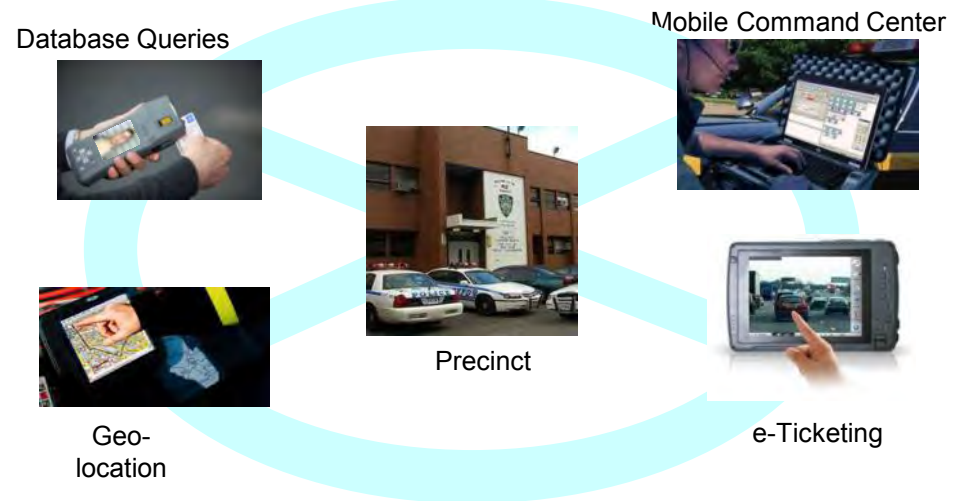
- D-Block

Sub-systems

- Communicative sub-systems/applications
 - Data receipt, processing, intelligent display and re-transmission
- Inter-operability devices/switches

Policies/Procedures

- Policies/procedures which support collaboration



Wireline & Wireless

What are the key components of an interoperable NG9-1-1 environment?

Standards

- NENA i3

Connectivity (Network)

- Standards based ESInet

Sub-Systems

- Communicative sub-systems/applications
 - Data receipt, processing, intelligent display and re-transmission
- Interoperability devices/switches

Policies/Procedures

- Policies/procedures which support collaboration

Continued

Wireline & Wireless

What are the key benefits of an interoperable NG9-1-1 environment?

1. Improved Delivery and management of content from IP endpoints
 - SMS and multimedia with greater mobility
 - ACN, CCTV, IP video, alarms, and real-time data
2. More flexible location of call-taking positions
 - Advanced routing capabilities
 - Resources reside any place on the network
3. Increased deployment flexibility
 - Virtual and physical consolidation
 - Backup, overflow, disaster recovery
4. Improved system availability / reliability
 - Highly survivable systems
 - No single points of failure



Wireline *(cont.)*

5. Potential lower communications costs long term
 - Bringing calls into the PSAP
 - Transferring calls out of the PSAP
6. Higher degree of interoperability
 - PSAP-to-PSAP
 - Between PSAPs and first responders
7. Significant new data sources
 - Improved situational awareness
 - Comprehensive incident management
8. A “call” becomes an “event”
 - Request for service (RFS) arrives in many forms
 - Prioritization determinations and SOPs will be needed



NG9-1-1 will enhance call handling and Public Safety

Sub-Systems

What are the key aspects of interoperable sub-systems?

Standards

- NENA i3
- Broadband Long Term Evolution (LTE)
- National Information Exchange Model (NIEM)
 - American National Standard (ANS)

Connectivity (Network)

- IP based

Sub-Systems

Sub-systems/applications must be modified for improved data handing & collaborative function

- Receive
- Pre-interpret & harmonize
- Intelligently display
- Act upon
- Share

Sub-systems/applications include;

- Radio, telephone, ENS, CAD, GIS, MIS, etc.



Collaborative Processes

Operational processes and procedures will have to be modified and/or developed to support

- Data utilization
- Collaboration

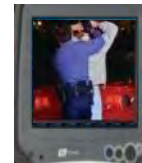
the Dispatch Center



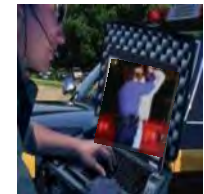
the Car



Sharing Video
From the
Scene with
Officers in...



the Field



the Mobile
Command
Center

NextGen Environment Characteristics

Steadily increasing amounts of data

Operations are modified to reflect more data centric operations

Collaboration becomes the norm

Infrastructure sharing (hosted infrastructure) becomes prevalent

Managed services become imperative in a next generation network (IP) world

Environment begins to take on “*Command & Control*” characteristics

QUESTION...

How will Next Generation and Interoperability improve
Public Safety?

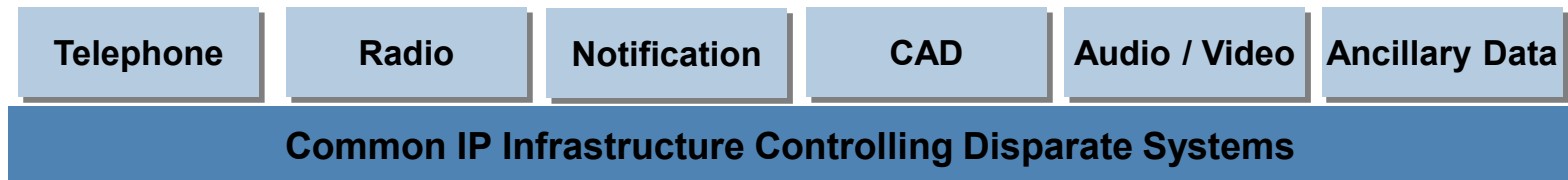
Concept

The improvement of Public Safety through Next Generation technologies, processes and interoperability is the concept behind...

Command, Control, Communications and Computing (C4)

Environment Characteristics

C4 : Command, Control, Communications, and Computing



Functional Benefits

- Content Preprocessing
- Immediately actionable display of relevant data
- Situational Awareness
- Common Operating Picture (COP)
- Quality of Command (QoC)
- Operational Effectiveness
- Collaboration & Interoperability

C4: Operational Benefits

The C4 “Continuum”

Situational Awareness (SA)

- Harmonized display of relevant data enhances the understanding of events thereby creating “situational awareness”

Interoperability & Collaboration

- Incident information and awareness can then be shared with all incident participants via the common IP infrastructure. Collaboration is possible with any/all users that have network connectivity regardless of location.

C4: Operational Benefits

Command, Control, Communications and Computers

The C4 “Continuum”

Common Operating Picture (COP)

- Collaborative data sharing creates a “common operating picture” (COP) among incident commanders

Quality of Command (QoC)

- A common operating picture enables more accurate and timely decision making thereby improving Quality of Command (QoC)

Operational Effectiveness (OE)

- All of the aforementioned advantages combine to ultimately improve total operational effectiveness and thus the safety of field personnel and the public

Bottom Line...Improved Public Safety!

Final Result...

Communications **are more efficient** due to improved, automated data handling

Incident information can be **securely transmitted anywhere in the country** with the click of a mouse

Increased **interoperability and collaboration** enabled through the seamless connectivity of agencies regionally, statewide or nation wide

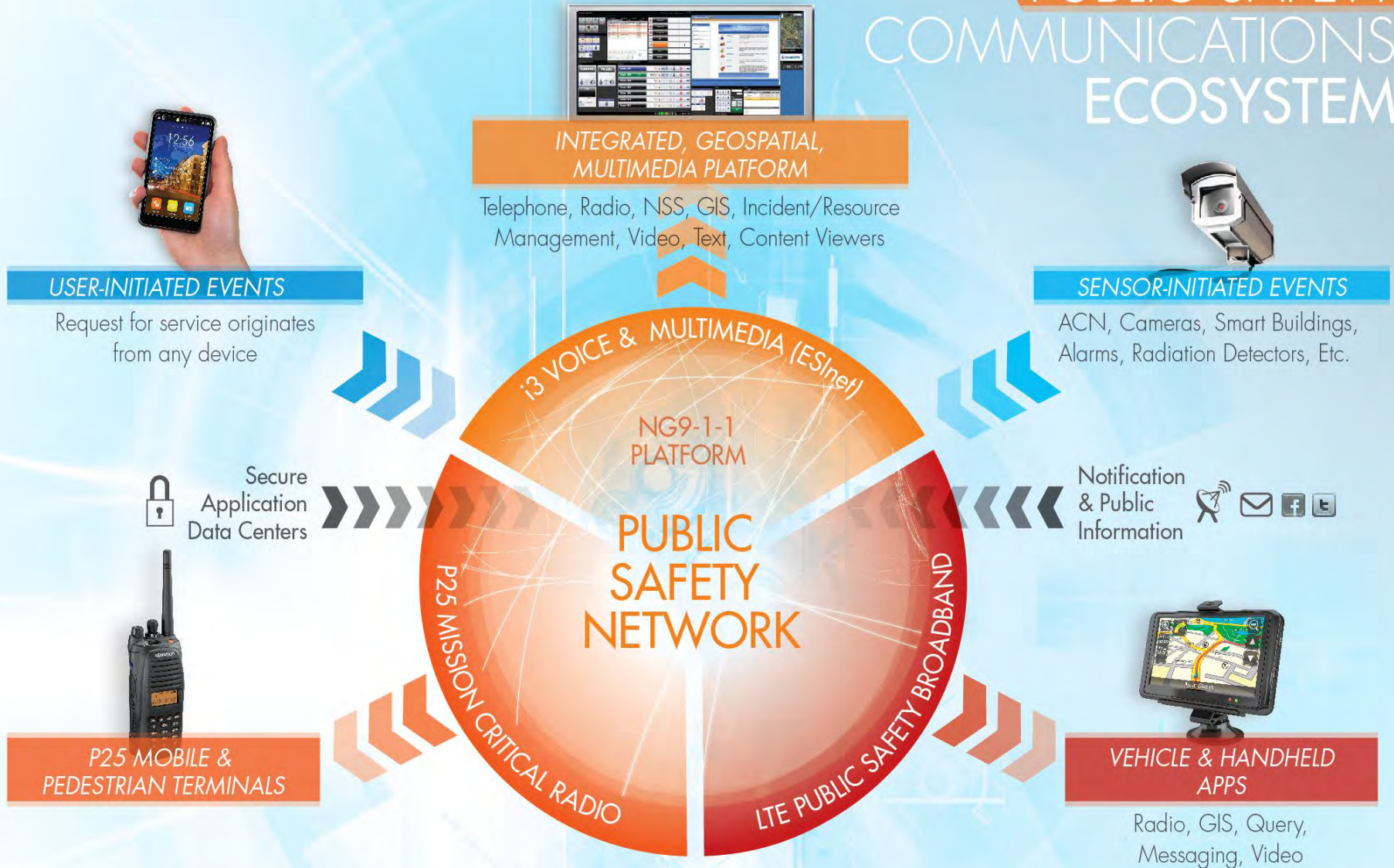
Emergency command center positions can be added dynamically implemented to address traffic volume fluctuations and major incidents

Browser based secure access simplifies and enhances system administration and response management capabilities

Public safety is improved as a result of the C4 Continuum



NEXT-GENERATION PUBLIC SAFETY COMMUNICATIONS ECOSYSTEM



CRITICAL MATTERS™

Thank You!

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